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# Medical Times

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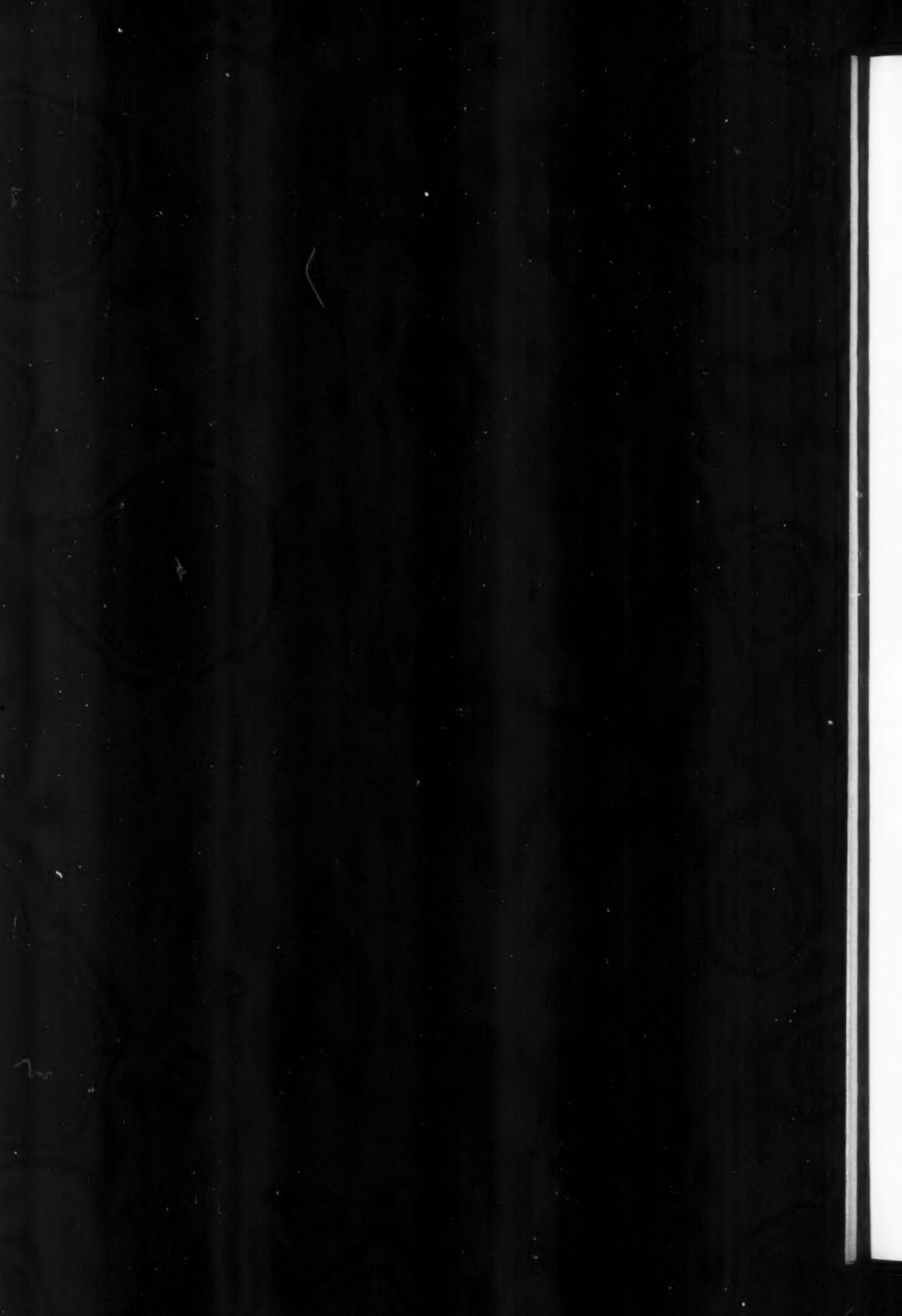


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## Treatment of Pneumonia By Physiological Support

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#### FOREWORD

HERE are two general methods which the physician employs in his treatment of disease, the specific and the physiological supportive. Using the first, he tries to cure the disease by his own direct procedures; using the second, he tries to help the patient to cure his disease.

In this paper the treatment of pneumonia by the second method, that of physiological support, is dealt with. This is done without prejudice to the work of those who are seeking an effective specific treatment of pneumonia. It is not too much to expect that human intelligence and enterprise will eventually find out effective methods of specific treatment of all diseases of microbial origin, as they already have done in the case of some of those diseases.

The study of the problems of physiological support is less brilliant in promise than the study of the problems of specific therapy, but it is not inferior to the latter in scientific dignity, and it is often more extensively fruitful of immediate benefit.

The suggestions for the treatment of pneumonia which are given here have already appeared for the

most part in numerous articles on pneumonia published by the writer during the last twenty years in various medical journals (1), and particularly in the NEW YORK MEDICAL JOURNAL AND RECORD and the MEDICAL TIMES AND LONG ISLAND MEDICAL JOURNAL: in those two journals appeared most of the material reproduced in this paper. That material is here digested, arranged and augmented, so as to present a definite plan of treating pneumonia by physiological support.

#### I. PRESENT STATUS OF PNEUMONIA THERAPEUTICS. WHAT IS MEANT BY PHYSIOLOGICAL SUPPORT

The wide prevalence, uncertain prognosis and comparatively high mortality rate of pneumonia have stimulated intense therapeutic activity. Attempts have been made to cure the disease directly by drugs used specifically and by symptomatic treatment used quasi-specifically. Among the drugs which have been so used may be mentioned creosote, salicylic acid, mercury, camphor, quinine and hexamethylenamine; and as examples of the quasi-specific use of symptomatic treatment may be mentioned routine bleeding, routine antipyresis, routine diathermia, routine ca-

tharsis, routine use of vasodilators, routine hyper-oxygenation, routine digitalization and the "cold air" treatment. The results of these direct attempts to cure the disease can not be considered satisfactory.

Attempts have also been made to cure the disease directly by biological specifics artificially prepared and introduced into the patient's body. These therapeutic attempts belong in a different category from those above referred to. They are in line with the curative method of nature, according to which the patient's organism after invasion by the pneumococci regularly puts into operation mechanisms for typing the invaders, for inventing specific substances capable of destroying them or neutralizing their activities, and for manufacturing these substances in sufficient quantities. These natural mechanisms require time for the accomplishment of their purpose (usually about a week), and in the meantime the patient may die. The advantage of having the specific substances prepared beforehand and ready to be put into the patient's body early in the course of the disease is obvious. But the mechanisms of human art by which specific antipneumococcus serums are prepared are not yet perfected; and there are difficulties in the way, notably the multiplicity of the varieties of pneumococci, the practical difficulty of always getting an early and correct typing of the invading microorganisms, and the regular conditions of the disease, particularly its short duration and the disturbances of function associated with it which can magnify the bad effects of imperfect fitness of the artificially prepared serums. This line of treatment has great promise; it has aroused our hopes; but it can hardly yet be considered to have emerged from the experimental stage.

At the present time it does not seem that we have an available method of specific treatment of pneumonia which is definitely better than nature's method. But if we cannot directly treat the disease, we can treat the patient. While waiting for human ingenuity and art to perfect a specific treatment of pneumonia more effective than that which nature has evolved during the ages, we can do much to help the patient to cure himself by treating him along the line of physiological support.

#### What does physiological support mean?

We know that the cells, tissues, organs and apparatuses of the human body, individually and in coordination, possess an inherent capacity not only for normal functioning but also for restoring themselves in greater or less degree to normality when injured, diseased or deranged. This natural medicine is highly developed all along the line, although it has not yet in its evolutionary progress attained perfection. In the truest sense it is regular medicine. Physiological support means cooperating with this natural medicine. It means doing things which help the disordered organism to restore itself and avoiding doing things which impede natural curative processes. And it involves resisting influences of bad tradition and wrong usage. It does not mean that the physician may not act independently in conditions where he is able to do things truly beneficial which nature is unable or less able to do; but it requires that when he assumes the independent rôle he should be reasonably sure that what he does is beneficial to the patient and not meddlesome medicine. And this distinction is not always easy for the physician to make, either in his independent therapeutic rôle or in his treatment by physiological support.

Physiological supportive treatment depends for success on knowledge of normal and pathological physiology and on ingenuity and skill in adapting means to ends. This knowledge, ingenuity and skill are imperfect. Deficiencies in knowledge are supplemented by opinions. In the plan of physiological supportive treatment of pneumonia here described opinions enter to a certain extent. The evidence supporting some of these opinions cannot be considered absolutely conclusive. Finality is not claimed for this plan. Consideration is claimed for it only to the extent justified by its intrinsic merits. The plan is flexible and open to improvement as knowledge shows the way. The door is left open for an effective specific treatment when that arrives.

In describing this plan controversial discussions are avoided as much as possible. They cannot be avoided altogether because of the conflicts of opinion which obtain extensively in the field of pneumonia therapeutics, and because some opinions not considered or approved in this plan possess special influence derived from old tradition or authoritative usage.

#### II. GENERAL HYGIENIC TREATMENT

The first thing to do in the treatment of pneumonia by physiological support is to put the patient in bed and in the horizontal position. How long should he stay thus in bed? From the time that the diagnosis is first made or suspected until at least a week after defervescence—how much longer depends on the severity of the disease and complications. The patient may generally be allowed to assume the position in bed most comfortable for him consistent with the horizontal position; and in cases with severe cardiac dyspnea some elevation of the head and shoulders may be allowed. Prolongation of the rest in bed is called for in cases of unusual severity, in cases occurring in aged persons, in cases with delayed resolution, in cases which have shown notable cardiac weakness, and in cases with persisting complications which naturally call for rest in bed. The transition from lying in bed to sitting in a chair should occupy several days, the patient sitting up in bed for increasing lengths of time during this period. After getting out of bed into the chair in the more favorable cases the patient can quite rapidly proceed to standing up and walking around. In such favorable cases convalescence is usually well established by two weeks after defervescence. But it is always best to be on the safe side, and in cases where there is any doubt, to prolong the period of rest in bed. If on first sitting up or getting out of bed the patient's pulse becomes notably rapid, he should immediately be put back in bed for further observation.

The patient should not be disturbed by unnecessary physical examinations. To roll him over to examine the back of his chest when there is notable circulatory or respiratory embarrassment is a violation of the principle of physiological support. It is more important to safeguard the heart than it is to ascertain the exact location and precise distribution of the areas of pulmonary consolidation.

The matter of giving the customary cleansing sponge baths should be carefully considered in each case. When the patient is very sick, when he is cyanotic, when there is pulmonary edema, when his pulse is very rapid or irregular, and near the expected time of defervescence, they should not be given at all. When allowed, they should be given gently, without much disturbance of the patient; and

often they should be only partial, of the face and selected parts of the body.

Mental rest should be favored. The diagnosis should be kept from the patient if possible. He should be encouraged by cheerful remarks. He should not be allowed to talk much. Visitors should mostly be kept away from him.

The importance of fresh air is recognized, but ventilation should not be confounded with drafts. The patient should be protected from chilling. The air should be kept at the ordinary sick room temperature, but drafts and anything that can chill the patient should be prevented. The writer looks on the "cold air" treatment as dangerous and likely to cause spreads of the disease and complications, especially near the time of defervescence and when the temperature is low. It is true that a patient with a high fever often stands cold well, but the contrary obtains when the temperature is low; and even in pneumonia with a high temperature there is always the possibility of the temperature dropping suddenly. To safeguard the patient against chilling is an essential feature of this plan of physiological supportive treatment of pneumonia.

### III. REGULATION OF THE DIET

Regulation of the diet means much for physiological support in pneumonia. Indications for regulating the diet in this disease are suggested by the following considerations.

The disease being of short duration, it is possible, consistent with safety, to reduce the quantity of the food to less than normal requirements. By reduction in quantity and careful selection of articles of food, it is possible to safeguard the patient to a considerable extent against certain dangers which regularly threaten in this disease.

From the alimentary tract dangers threaten particularly to the cardiovascular system, by way of toxemias, disturbances due to visceral distention and dilatation of the splanchnic blood vessels, and reflex nervous disturbances. These dangers can be aggravated by excessive amounts of food or food which is difficult or slow of digestion, and by food which favors the growth of the putrefactive types of bacteria in the intestine; and they can be minimized by a diet which is limited in quantity and made up of fluid articles which are easily digested and of a character that invites the less injurious or more favorable fermentations.

The presence of fever calls for increased rations of alkaline salts to offset the acid tendency of fever; and the leucocytosis and fibrinous exudation into the lungs, as well as the increased metabolism generally, call for extra rations of calcium to safeguard against depletion of that necessary element.

The toxemias as well as the fever and increased metabolism call for a large water ration to favor elimination; but on the other hand, disease or dysfunction of the heart or kidneys may require that the fluid intake be restricted.

The following food articles are generally suitable for inclusion in the pneumonia dietary: Modified milk, cereal gruels, strained fresh juices, lactose and dextrose, alkaline salts, particularly of sodium and calcium, and water. Among the objectionable food articles often given in this disease may be mentioned to be avoided, raw egg albumin and the patent foods featuring the words "peptone" and "peptonoid".

There is no standard diet possible for pneumonia. A diet which would be suitable for an average case

doing well, might be quite unsuitable for a very severe case, for one with tympanites or diarrhea, for one with heart failure, for one with very low blood pressure, or for many cases near defervescence.

The following dietetic prescription is suggested for the average case which is doing well. It supplies daily about 40 grams of protein, about 2 grams each of sodium chloride, sodium bicarbonate and calcium salt, in addition to those salts present in the articles of food given, about 2700 grams, or 90 ounces, of water, and has a fuel value of about 1200 calories.

#### FULL PNEUMONIA DIET

At 7 a.m.—Give 7 ounces (210 gms.) of a two-to-one mixture of milk and barley water, to which has been added 5 grains (1/3 gm.) of sodium chloride and 5 grains (1/3 gm.) of sodium bicarbonate.

At 9 a.m.—The same as at 7 a.m.

At 10 a.m.—Give 7 ounces (210 gms.) of water in which has been dissolved 10 grains (2/3 gm.) of calcium chloride or lactate.

At 11 a.m.—The same as at 7 a.m.

At 1 p.m.—The same as at 7 a.m.

At 2 p.m.—The same as at 10 a.m.

At 3 p.m.—The same as at 7 a.m.

At 5 p.m.—The same as at 7 a.m.

At 6 p.m.—The same as at 10 a.m.

At 7 p.m.—The same as at 7 a.m.

At 10 p.m.—Give the following mixture: Strained juice of orange, grapefruit or pineapple, 2 ounces (60 gms.), lactose or dextrose, 2/3 ounce (20 gms.), and water, 5 ounces (150 gms.).

At 2 a.m.—The same as at 10 p.m.

At 6 a.m.—The same as at 10 p.m.

If desired and so ordered, the fruit juice feedings can be given in the day time, at 8 a.m., 12 m. and 4 p.m., instead of in the night time. If the patient is sleeping when a feeding time comes, the feeding then called for may be postponed.

In place of the milk mixture above prescribed, peptonized milk may be given whole or in the same mixture, or lactacidized milk, or junket, if so ordered.

Extra calories may be secured, if desired, by increasing the lactose or dextrose in the fruit juice mixture and by increasing the number of the feedings of that mixture.

All food should be administered through a drinking tube.

#### MODIFICATIONS OF THE FULL PNEUMONIA DIET

The pneumonia diet above often requires modification to suit particular conditions.

When the disease is of severe type it may be advisable to omit more or less of the milk in the milk feedings; and if the full fluid ration is to be maintained, barley water may be substituted for the milk, or extra fruit juice feedings substituted for some of the milk mixture feedings; and regularly near the expected time of defervescence the diet should similarly be reduced. In general it may be said that the sicker the patient, the less food should be given. In extreme cases it may be necessary to reduce the diet to water, salts, strained fruit juices, lactose and dextrose. But it is always desirable to give as near the full water ration as circulatory conditions permit, and to give full rations of minerals, and particularly of calcium. In the highly restricted diets it is also desirable to give extra rations of lactose and dextrose.

If there is notable heart weakness, the fluid should be restricted, which can be done by reducing the quantities of all feedings, or by omitting some of

them; and generally the sugar content of the diet should be increased.

In cases with severe heart failure modification of the Full Pneumonia Diet by omission of all the milk mixture feedings may be found advantageous, especially if extra dextrose is given. Such omission reduces the water ration to 42 ounces (1260 gms.).

If there is much tympanites the milk should be omitted from the diet temporarily, or if given, lactacidized or peptonized; or the diet may be reduced temporarily to barley water alone, or to barley water and salts, or to barley water, salts and dextrose.

If there is diarrhea practically the same modifications of the diet are called for as in the case of tympanites.

Following are some examples of modification of the Full Pneumonia Diet:

A. That diet, with quantities of all feedings reduced to 5 ounces (150 gms.).

B. That diet, with substitution of barley water for one-half of the milk in the milk mixture.

C. That diet, with substitution of barley water for all of the milk in the milk mixture.

D. That diet, with substitution of the fruit juice mixture for the milk feedings at 7 a.m., 11 a.m. and 4 p.m., and omission of the other milk feedings.

E. That diet, with substitution of the fruit juice feedings for all of the milk feedings, and omission of the fruit juice feedings at night.

F. That diet, with omission of the milk feedings at 9 a.m., 1 p.m. and 7 p.m.

G. That diet, with omission of all of the calcium feedings.

H. That diet, with omission of all of the fruit juice feedings.

In any of the above diets the caloric value can be increased by substituting a five per cent. solution of a pre-digested cereal in water for the barley water, as well as by increasing the lactose or dextrose.

After defervescence the calcium feedings should be omitted; and in favorable cases the diet should be increased rapidly. It is advisable, however, for at least a week after defervescence, and longer if notable symptoms of cardiac or renal disease persist, to keep the diet within lactovegetarian limits.

#### IV. MANAGEMENT OF THE BOWELS

When we consider the management of the bowels in pneumonia we find the subject prejudiced by tradition and general usage. It is an old therapeutic tradition that the treatment of disease generally should be begun with a clearing out of the bowels and that daily evacuations of the bowels should be induced as a matter of routine. This tradition has become almost a therapeutic dogma. The first thought of most physicians in most cases of disease is to move the bowels, and their solicitude about daily bowel evacuations is often shared by the patients. In former times it was believed that bad humors, causative of disease, could be removed from the body by increased bowel activity. The doctrine of humoral pathology has been relegated to the museum of medical history, but catharsis *per se* seems not yet entirely to have lost its therapeutic appeal.

This cathartic tradition is quite in line with the natural habit of the bowels, and in many conditions of disease, when regular natural evacuations fail, it is beyond question good medicine to interfere with cathartics and enemas. Such interference, however, should be in accordance with the principle laid down by Hippocrates in his Second Aphorism, as follows: "Artificial evacuations of the bowels, if they consist

of such matters as should be evacuated, do good and are well borne, but if not, the contrary."

While in many conditions routine catharsis may be good medicine, it is possible for conditions to exist in which it is contraindicated. It is possible that the interests of the patient in some conditions may be better served by modifying the rule of daily evacuations than by rigidly enforcing it. In the year 1913 the writer became convinced that conditions calling for modification of this rule existed in pneumonia, and since then a policy of conservative management of the bowels has been an essential feature of his plan of physiological supportive treatment of pneumonia.

Conservative management of the bowels in this plan means that bowel evacuations are not artificially induced during the active period of the pneumonia in routine fashion, but only for special reasons, that is, for reasons other than failure of daily bowel movements to occur naturally. The following appear to be *a priori* reasons for considering moderate constipation less harmful than routine purgation in this disease. Artificially induced bowel movements disturb the patient more than those which occur naturally. They favor increased fluidity of the bowel contents with increased bacterial growth therein and toxic absorption therefrom. They predispose to gaseous distention of the bowels. They excite nervous reflexes which can affect unfavorably the cardiovascular system, especially when the blood pressure is low, as is often the case in pneumonia, and they may even put a patient with an unstable cardiovascular system in jeopardy from the physical exertion as well as from the nervous reflexes involved. And in the case of some cathartic agents they may introduce into the blood stream injurious substances.

In the practical application of this policy of conservative management of the bowels the writer's procedures may be summarized as follows. If the patient is seen in an early stage of the disease and has not had an evacuation within twenty-four hours, an enema (not a cathartic) is usually given; but if when first seen he is in the later stage of the disease, or is in poor condition, as shown by very rapid or irregular heart action, very low blood pressure, very rapid breathing, cyanosis or the presence of pulmonary edematous râles, the enema is usually not given. Thereafter no enemas are given during the active period of the disease except to meet special indications. If tympanites develops which regulation of diet does not correct, an enema may be given. If the patient complains of a sensation of fulness in the rectum, and at the same time does not show signs of notable circulatory embarrassment, an enema may be given. Sometimes in the middle of the course of the disease, when it is progressing favorably and natural movements have not taken place, an enema may be given. Regularly on the second day after defervescence, if natural movements have not taken place, an enema is given. Cathartics by mouth are practically never given during the active period of the disease.

The enemas which are given when called for by the indications above mentioned are mainly the following: The ordinary soapsuds enema; an enema composed of a pint of water or normal saline solution, at body temperature, in which has been dissolved one dram of powdered oxgall; and an enema of five ounces of olive oil, at body temperature, which is given to be retained. The soapsuds enema is the one most commonly used. The oxgall enema is given

particularly when there is tympanites. The olive oil enema is given in cases where some impaction of feces is suspected, and is followed in about four hours by a soapsuds or an oxgall enema.

In connection with this conservative management of the bowels goes special regulation of the diet, as previously described; and also, avoidance of disturbing medication, which means not only avoidance of disturbing cathartics, but also of other disturbing medication.

#### STATISTICAL NOTE

This policy of conservative management of the bowels, owing to the strongly contrasting background of contrary tradition and general usage, stands out prominently in this plan of physiological supportive treatment of pneumonia. Because of the challenge made by this policy to almost universal practice, it seems proper here to cite some comparative statistics to illustrate the practical working of this policy. For this purpose statistics of cases in the writer's service in the Norwegian Hospital, Brooklyn, N. Y., before and after adoption of this policy, are cited.

Three series of cases are cited, the first being of cases treated before the adoption of the policy of conservative management of the bowels, and the other two being of cases treated after the adoption of that policy. The comparison may be considered a fair one, as the three series are generally similar in character, being of cases from the same locality, being continuous and unselected, and covering considerable periods of time. The treatment outside of the management of the bowels was not radically different in the three series, although in the two later series there was some refinement of details.

The first series, of 124 cases, includes the cases diagnosed as primary lobar pneumonia and influenza pneumonia in the writer's service in the above named hospital between May 1, 1906, and January 1, 1913. The mortality in this series was 30.6 per cent.

The second series, of 218 cases, includes the cases diagnosed as primary lobar pneumonia and influenza pneumonia in the writer's service in the same hospital between January 1, 1913 and July 1, 1918. The mortality in this series was 18.8 per cent.

The third series, of 190 cases, includes the cases diagnosed as primary lobar pneumonia and influenza pneumonia, excepting those which came into the hospital after defervescence, in the writer's service in the same hospital between January 1, 1920, and March 5, 1931. The mortality in this series was 16.3 per cent.

The records of the last series have been studied with special reference to the details of bowel movements and enemas and the clinical picture presented.

Of the 190 cases in this series, 159 cases recovered and 31 died. Of the 159 which recovered, 17 were complicated by diarrhea, and are excluded from this study. The total number of bowel movements of the 142 patients who recovered and also did not have diarrhea, during the febrile period in the hospital, was 263, and the total number of enemas given to them in that same period was 94. It is thus seen that nearly two-thirds of the bowel movements occurred naturally. The total number of febrile days of these patients in the hospital was 670. The ratio of bowel movements to febrile days in the hospital was therefore, 1 to 2.6; which means, that a bowel movement occurred on the average once in every two and two-thirds days. Tympanites was noted in twelve of these cases.

The foregoing statistics would seem to support the proposition that a policy of conservative management of the bowels in pneumonia, the treatment otherwise being in keeping with it, favors an improved clinical picture and a comparatively low mortality rate.

#### V. MANAGEMENT OF THE HEART AND CIRCULATORY SYSTEM

Circulatory conditions regularly call for physiological support in pneumonia; always prophylactically, often directly; prophylactically by rest, dietetic regulation, conservative management of the bowels and avoidance of disturbing medication; directly by the use of heart stimulants and heart regulators.

The safeguarding of the heart by physical and mental rest has been alluded to. Most patients convalescing from pneumonia show rapid recovery of heart strength, but there are some who do not, especially aged patients, those who have shown evidences of severe heart strain, and those who have actual complicating infective disease of the heart. In these cases prolonged rest in bed is called for. In this connection may be mentioned the bradycardia which sometimes appears immediately after defervescence and lasts for several days or weeks. Its management calls particularly for rest in the horizontal position. In connection with mental rest the question of opiates comes up. This question will be referred to later.

The safeguarding of the heart from dangers which threaten from the alimentary tract, including those for which the injudicious use of cathartic agents may be responsible, has already been discussed; and also the safeguarding of the heart by regulation of the diet. In connection with the diet a warning against the practice, which appears to be common, of giving the unqualified order to "force fluids" in this disease is called for. If heart weakness is present an excess of fluids in the diet, or even a quantity of fluids otherwise desirable, may do harm.

Safeguarding the heart against disturbing medication invites special notice because of the frequency with which drugs that excite or depress the circulatory mechanism have been abused in the treatment of pneumonia. This phase of the subject will be referred to later.

While many cases of pneumonia run their course without requiring the direct help of heart stimulants or heart regulators, a considerable proportion of the cases call for the use of these agents.

By heart stimulants are meant agents which act on the myocardium to increase its contractility and tonicity. Of these agents strophanthin has been found in the writer's experience to be the most effective(2). This drug appears to act directly on the muscular tissues of the heart, and not on its nervous controls, which is an advantage, especially in view of the often overactive vagus function in pneumonia.

Strophanthin should be given on the first appearance of signs or symptoms indicating heart failure, and it should be given in doses graduated to suit the degree of the heart failure. In the mild cases the dose should be small; as the symptoms indicate progressive weakening of the heart, the dose should be increased; and in the severe cases, with rapid and irregular pulse and notable pulmonary edema and cyanosis, full or large doses should be given. In cases of emergency, as when the heart suddenly and seriously fails, a maximum dose may be given. But in general the smallest doses should be given which can maintain the circulation in a state of reasonable efficiency. It is bad practice to risk exhausting the heart by giving this powerful stimulant in large doses in the early stages of the disease or when the heart failure is only of moderate degree; but in the severe cases, and

especially when the heart fails late in the disease, a certain amount of boldness in its use is justifiable. After defervescence, unless cardiac complications are present which call for continuance of heart stimulation, the strophantin should be rapidly withdrawn, the doses being diminished in size and discontinued altogether as soon as the need for stimulation disappears, which usually happens within a few days after defervescence.

Not only the dosage but also the administration of strophantin and the preparation used require special consideration.

Strophantin is not a standard, uniform drug; different preparations bearing the name are on the market which have not exactly the same dosage; some are crystalline and apparently uniform in composition, while others are amorphous and not so. The strophantin of the U. S. Pharmacopeia is an amorphous strophantin, and is an uncertain "mixture of glucosides", which is otherwise defined by stating the species of the plant from which it is derived.

The writer attempts to secure uniformity in action of strophantin by always using the same commercial preparation, which the makers have physiologically standardized, so that a tablet of a given named quantity will produce the same physiological effect as another tablet of the same named quantity. This preparation is an amorphous strophantin which conforms to the requirements of the Pharmacopeia. Of this preparation the writer has found by practical experience the following doses to be serviceable in pneumonia.

The small dose, to be used on the first appearance of signs or symptoms indicative of heart failure, is one one thousandth of a grain, given sublingually, four times a day or every four hours. In a fair proportion of the cases it will not be found necessary to increase this dosage. The moderate dose, which is given in cases which show notable signs of circulatory embarrassment, but which are still in fair condition, is one five hundredth of a grain, given sublingually four times a day or every four hours. This dosage suffices for a goodly proportion of the cases. In the severe cases, with more pronounced evidences of heart failure and particularly notable cyanosis or pulmonary edema, the full dose is called for, which is, one five hundredth of a grain given hypodermically every four hours. In very severe cases showing urgent symptoms, larger doses may be given for short periods, even one two hundred and fiftieth of a grain given hypodermically, every four hours. Such doses can not be given long, and require to be watched carefully. In an extreme case, with sudden failure of the heart and extensive pulmonary edema, a single dose of one one hundredth of a grain may be given by deep intramuscular injection or intravenously. After that, the drug should not be given again for twenty-four hours.

It cannot be too strongly emphasized that strophantin should always be used in the smallest doses practicable. Its routine use or its quasi-specific use is to be condemned. Its use is justified only as a stimulant to the heart, and to the extent of giving it necessary support without exhausting it. Very rarely is a larger dosage required than one five hundredth of a grain, given hypodermically every four hours; and this dosage should not be kept up very long, although it is usually safe for the period during which it is likely to be needed in pneumonia.

Strophantin should never be administered by mouth to be swallowed. The intravenous method is the most direct and effective; but by deep intramuscular injection quick results can be obtained in emergencies; and for ordinary use, the hypodermic method is found effective; and in cases where full dosage is not required, sub-

lingual administration has been found in the writer's experience to be followed by results which seem to prove the effectiveness of that method of administration.

The idiosyncrasy in regard to strophantin which is manifested by gastrointestinal disturbances is observed infrequently when the drug is administered as above described.

Besides strophantin there are no direct heart stimulant drugs used in this plan of physiological supportive treatment of pneumonia, unless calcium, which is necessary for muscular contraction, may be considered a direct stimulant in cases where calcium deficiency exists. As a safeguarding measure against this deficiency, calcium chloride or lactate is regularly added to the pneumonia diet. Maintaining a proper sugar ration may likewise be considered as making directly for support of the myocardial function.

The other heart drugs which have an occasional place in the management of the heart in pneumonia according to this plan of physiological supportive treatment, may be classed as heart regulators. Of these heart regulators the writer has found strychnine, caffeine, morphine and alcohol particularly useful. Digitalis might be indicated as a heart regulator in cases complicated by auricular fibrillation or an old mitral stenosis threatening auricular fibrillation. The use of digitalis in pneumonia is discussed in a special note farther on.

Strychnine can be used for its effect on the vasomotor mechanism, and as a stimulant or synergist to the adrenal sympathetic system. It may be given in cases with very low blood pressure. It may often be the first heart drug given, and the only one. Its effects should always be watched, and if it seems to excite the nervous system unduly, it should be discontinued. It should never be given in large doses; the regular dosage in this plan of treatment is one sixtieth of a grain, given three to six times a day.

Caffeine can also be used for its effect on the vasomotor mechanism, and also as a respiratory stimulant. The ordinary dosage in this plan is two grains of the sodiobenzoate, given every four hours. Larger doses should not be given except in special emergencies, as in severe pulmonary edema and in vasomotor paralysis. If it seems to excite the patient unduly, it should be discontinued. In the milder cases both strychnine and caffeine can be given by mouth, but in the severer cases, and especially in emergencies, they should be given hypodermically.

Morphine allays pain, cough and anxiety, and induces sleep. It may thus act to protect the heart. It sometimes proves of great use given early in the disease by securing much needed sleep. Later in the disease it is generally contraindicated, because then it may be necessary for the patient to keep awake and to breathe rapidly in order to carry on. It should never be given in very large doses, it should practically never be given late in the disease, and in the early stage of the disease it should be given only when the indications for it are imperative.

Alcohol may also act as a sedative, allaying restlessness and anxiety; and it may have a beneficial effect in the early stage of the disease by acting as a vascular relaxant. Its use should be restricted practically to selected cases occurring in elderly people and to alcoholic subjects. It should be given only in small or moderate doses.

In the use of these heart drugs it cannot too strongly be insisted on that their dosage should be kept at the minimum which is effective. It is very easy even when using them with the best physiological supportive intentions, to pass over the boundary line between physiological support and meddlesome medicine.

#### NOTE ON THE USE OF DIGITALIS IN PNEUMONIA

The occasional use of digitalis as a heart regulator in the physiological supportive treatment of pneumonia has been alluded to. The writer will not go into details regarding that use of it. It has little or no place in the plan of supportive treatment here described. But the routine use of digitalis in specific dosage—routine digitalization of the heart in pneumonia, occupies so large a place in contemporary medical practice that it invites investigation of its claims to be considered good therapeutics.

The routine use of digitalis in pneumonia in large doses was suggested a generation ago, but then failed to get into wide use, although it got into the text books. After the stirring up of the World War this treatment acquired its extensive vogue. The explanation given by the advocates of this treatment to justify the disturbance of the heart muscle, the disturbance of the vasomotor mechanism and the possible derangement of the gastrointestinal tract which it entails, is that if auricular fibrillation should develop, the digitalis would already be there.

Auricular fibrillation is a recognized indication for digitalizing the heart; but auricular fibrillation is not of regular or very frequent occurrence in pneumonia. Moreover, the question arises, whether conditions may not exist in pneumonia which could modify this indication for digitalis even if it should be present.

Mackenzie says: "The factors existing in the heart, such as high temperature, toxins, invasion of the heart by specific organisms, exert an influence which digitalis cannot overcome."<sup>(3)</sup> He also says: "The action of digitalis on the heart is modified by the diseases that may be present"<sup>(4)</sup>. He also says: "We have found only rare instances where the blood pressure was raised, and a great many where it was lowered, by digitalis"<sup>(5)</sup>. This last statement is important in view of the fact that low blood pressure is common in pneumonia, and that vasomotor paralysis is among the serious dangers which threaten in this disease.

Furthermore, while digitalis by its influence on the vagus relaxes the heart, and by its direct influence on the myocardium diminishes the ability of the latter to conduct contractile impulses, it does not, in the opinion of some eminent authorities, directly increase myocardial contractility and tonicity; and that, if it is the fact, bears adversely on its claims to be considered a heart stimulant of value in the treatment of heart failure in pneumonia.

In this connection the following statement of Mackenzie is significant: "Digitalis and drugs allied to it have long been recognized as having an effect on the heart, but the more these drugs have been studied, the clearer it becomes that it is only in certain definite conditions that they act, and that the sphere of their usefulness is very limited. The beneficial influence of digitalis in such conditions as heart failure from auricular fibrillation has led to its employment in all forms of cardiac weakness. . . . It is to be observed that such a reaction (slowing of the pulse after digitalis) rarely occurs in conditions other than auricular flutter or fibrillation. There are no doubt a few rare conditions in which a slowing of the pulse may result, but as a rule, digitalis has little or no effect upon the rate of hearts with a normal rhythm. So far it seems that the beneficial effects which result from digitalis are not due to any other cause than the mere slowing of the heart rate—it is not necessary to assume that digitalis has any other effect than this. It often happens that the heart may be slowed in auricular fibrillation and no improvement take place. It can then be reasoned that the heart muscle is so damaged that even when slowed the output is not sufficient to maintain an efficient circulation"<sup>(6)</sup>.

Again Mackenzie says: "For a great many years it has been recognized that digitalis has little or no effect on a great many hearts"<sup>(6)</sup>.

Paul D. White says: "Without doubt the great reputation that digitalis has acquired throughout the world results from its toxic effects on the conducting tissues and its production of heart block in auricular fibrillation, and not from its stimulating effects on the myocardium"<sup>(7)</sup>.

Vaquez makes the following statement regarding cases of heart failure which digitalis does not help, after having previously done so, while the pathological syndrome shows no obvious change: "There has intervened some new factor which escaped the influence of digitalis. This factor over which digitalis has no control is the loss of myocardial tonicity, for, speaking physiologically, digitalis is not a heart tonic, as it has often been called"<sup>(8)</sup>.

During the last twenty years digitalis has been practically excluded from the list of heart drugs used by the writer in pneumonia. In the last two series of hospital cases reported in the Statistical Note previously given, which series aggregated 408 cases, digitalis was prescribed only once, as the writer remembers, during the active period of the disease after the patients came under his care. From the comparatively low mortality rate of these series it might be inferred that the use of digitalis in pneumonia is not a therapeutic necessity.

#### VI. SYMPTOMATIC TREATMENT

In the treatment of pneumonia by physiological support the treatment of symptoms is conditioned by the fact that symptoms are not necessarily evidences of disease; they may be manifestations of constructive activity on the part of the organism. Their suppression is not called for as a matter of course, but as a matter of policy. The relief from the injury or discomfort produced by symptoms must be balanced against possible bad consequences of therapeutic interference in physiological processes. Symptomatic treatment operates through procedures which modify physiological processes so as to oppose the physiological processes responsible for the symptoms, or it operates by removing conditions which necessitate or give rise to symptoms. The important fact to bear in mind in this connection is that the mere presence of symptoms is not necessarily an indication for symptomatic treatment.

Fever is a symptom regularly present in pneumonia, but its reduction is not generally indicated because it is a constructive reaction on the part of the patient's organism against the bacterial invasion. It has long been a matter of clinical observation that pneumonia patients with a fairly high fever were apt to do better than those whose fever was low. It has been observed that certain animals whose normal temperature is considerably higher than that of man are regularly immune to pneumonia. But while the fever in pneumonia does not regularly call for treatment, exceptions to this rule are possible, as when hyperpyrexia persists for a considerable time; in which case, if no contraindications are present, as feeble heart action or cyanosis, antipyretic hydrotherapy in the form of sponge baths might be employed cautiously, that is, with a minimum of physical disturbance of the patient. But indications for such antipyretic treatment appear so rarely in pneumonia, and are so often doubtful, that they can practically be ignored in the physiological supportive treatment of this disease.

Pain in the chest due to pleurisy is a common symptom in pneumonia. A certain amount of relief may be afforded by application of hot poultices to the chest. Flaxseed poultices serve the purpose perhaps better than those which include a counterirritant.

The use of opiates in pneumonia to allay pain, cough and restlessness has been alluded to in connection with

the management of the heart. In case of severe chest pain or harrassing dry cough, occurring early in the disease, their cautious use may give physiological support by securing sleep which will be an asset of value to the patient, enabling him better to endure the sleeplessness of the later stages of the disease. But the same symptomatic treatment given late in the disease, when it may be necessary for the patient to keep awake and to breathe rapidly in order to live, may be meddlesome medicine. Opiates if given should be given in comparatively small doses; they should not be given near the expected time of defervescence; they should not be given if there is cyanosis; they should not be given in continued dose. When there is any doubt about the advisability of their use, it is better not to give them at all. Codeine may sometimes be found preferable to morphine.

Delirium often calls for treatment, particularly to prevent the patient from getting out of bed. Sedative drugs, especially morphine and hyoscamine, are not absolutely forbidden, but as large doses are usually necessary to be effective, they are generally undesirable. The writer generally prefers physical restraint to sedative drugs in the treatment of the delirium of pneumonia.

In this connection must be emphasized the importance of constant watchfulness to prevent the patient from getting out of bed in suddenly developed delirium. To be perfectly safe, the patient with pneumonia should be under constant observation, or he should be under physical restraint.

Pulmonary edema should be treated by heart stimulation, as before described. Caffeine is a useful drug in this condition.

Cyanosis, if pronounced, is an indication for the administration of oxygen by inhalation. Oxygen, used conservatively, may be of great benefit in cyanotic cases.

#### VII. A PRIMER OF PNEUMONIA THERAPEUTICS

While waiting for human enterprise and art to find out an effective specific treatment for pneumonia, treat the patient according to the principle of physiological support.

Keep the patient in bed and in the horizontal position, allowing him otherwise to assume the most comfortable position, from the time the diagnosis is first made or suspected, until at least a week after defervescence—how much longer depends on the severity of the disease and complications.

Protect him from chilling.

Support his morale and favor his mental rest.

Do not disturb him by unnecessary physical examinations.

Do not disturb him by routine catharsis. Use enemas occasionally, but only for special reasons other than failure of daily evacuations.

Arrange his diet so as to safeguard against acidosis, indigestion, diarrhea, tympanites, intestinal toxemias, nephritis and heart failure. Remember that the sicker the patient, the less food should be given.

Give abundant water, but regulate the quantity by the condition of the heart and kidneys. Never give the unqualified order to "force fluids."

In treating heart failure use strophanthin according to the indications.

Remember that symptoms are often constructive reactions and do not necessarily call for treatment. Treat them only in such manner as can be justified by the principle of physiological support.

Do not give opiates in the later stages of the disease, and cautiously in the early stages.

Remember that a considerable proportion of the cases of pneumonia will get well if they receive no other treatment than hygienic care and regulation of diet.

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#### Essential Hypertension

Marcus Backer thinks it justifiable to state that the enthusiastic rush for the best treatment of essential hypertension has occupied too large a part of the bulky literature on this subject, that the keynote in the prevention and therapy has not yet been struck, and that little light has been thrown on the etiology of the condition. While a variety of contradictory opinions have been expressed concerning the etiology, there is no difference of opinion that increased resistance of the peripheral vessels is the essential factor in the etiology of hypertension. A review of some of the theories advanced to explain the inability of the arterioles to relax leads to the conclusion that the autonomous innervation of the arterial system responds to a multiplicity of stimuli, that the nervous tracts which effect a change of the peripheral arterial resistance are manifold, and that the combination of these circumstances allows for a wide variety of physiological and pathological possibilities. These pathological possibilities depend upon the specific make-up of the autonomous nervous system, which the author believes is the dominant factor in patients suffering from hypertension. He has observed that certain individuals, who have worked most strenuously for two or more decades, and whose lives are full of worry and excitement, have at all times either a normal or a subnormal blood pressure. Similarly, the well-known occurrence of numerous instances of hypertensive disease in the same families leads to the belief that vascular resistance primarily depends upon the fundamental fabric of the particular autonomous nervous system as such. In the light of these considerations, essential hypertension is reduced to the rank of a mere symptom, and is to be viewed solely as a manifestation of a certain abnormal type of constitution. Whether this abnormality concerns the constitution of the vegetative nervous system alone, or whether it may possibly be correlated independently with other constitutional abnormalities (endocrine glands and other hormone-producing tissues), is not known. Backer offers the idea of a constitutionally increased neuro-muscular tonus of the arterial system simply as a starting point which suggests a number of questions for investigation.—*American Journal of the Medical Sciences*, May, 1931, clxxxix, 5.

#### Racial Color Study

The great yellow races are the Chinese, the Japanese and the one that pays tribute to racketeers.—*Los Angeles Times*.

# Modern Control of Epidemic Poliomyelitis (Infantile Paralysis)\*

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THE control of poliomyelitis is far less adequate than we might wish it were. To control adequately a communicable disease several essentials are necessary that we have not as yet attained in infantile paralysis. If a disease is spread by insects, as malaria and yellow fever, the eradication of those insects, and the protection from bites by them, serve as an adequate method of control. So far as we know, infantile paralysis is not spread by insects. If we are able to determine by some test which individuals are susceptible, and which individuals are immune to a disease, we have, as in the case of diphtheria and scarlet fever, a most helpful method of control, especially if, as in the case of both these diseases, we have some means of actively immunizing patients against them. We have no such tests in infantile paralysis. Neither have we any safe method of actively immunizing patients against poliomyelitis. We know from clinical observation that only a very small percentage of individuals, even of the most susceptible age, which is from the second to the fifth year, contract the disease. From the fifth to the tenth year individuals are still quite susceptible, and as they advance over the tenth year, the number of persons contracting the disease per thousand becomes less and less. In just what way that immunity which we so frequently enjoy is obtained, we are not absolutely sure. It is rather commonly accepted that it is acquired by repeated exposures to the disease, exposures in which we either fail to contract it at all, or contract some very mild form which is not recognized as poliomyelitis. We are sure that large numbers of individuals enjoy this immunity, not only from clinical observations, since they are repeatedly exposed with impunity, but also because the blood of many persons giving no history of poliomyelitis is shown to contain to a very considerable degree the property of neutralizing the virus of poliomyelitis, so that when a mixture of the serum and the virus is inoculated, monkeys fail to develop the disease. It may be that the immunity which we have is not entirely obtained in this way. Some observers, for instance, Aycock of Boston, suggest it may be an immunity acquired by some mechanism within the organism itself. Some such method as that may play a part in our development of immunity.

It has been known since 1909, when Landsteiner produced the disease experimentally in monkeys by using an emulsion of the brain and cord from a fatal case of poliomyelitis, and further by the work of Flexner and Lewis and that of Levaditi, that the disease is caused by a filterable virus contained in the brain and cord of fatal cases. This emulsion of the brain and cord can be passed through a filter which keeps out ordinary bacteria, and the disease can be reproduced in monkeys by various ways of inoculation, usually the intracerebral route. This inoculation produces a disease, similar to infantile paralysis in man, in the monkey, and also produces the same pathological lesions. The brain and cord

of a monkey inoculated and dying of the disease can produce the disease in a series indefinitely, and the inoculation of this material never produces any disease except infantile paralysis. It behaves in a specific manner, and while we are not able to see it under the microscope, and it has not been cultivated successfully in the hands of most bacteriologists, nevertheless the filterable virus is a definite entity. As the years go on, doubtless the work on filterable viruses will open up new fields of medical research. At different times it has been reported that an organism has been cultivated from this material. At one time Flexner and Noguchi reported the cultivation of what they called "globoid bodies." This has not been successfully repeated, and I believe at the present time Dr. Flexner places no very great importance on the work done at that time. Certain workers have reported the cultivation of a pleomorphic streptococcus from the brain and cord of fatal cases and of the artificially induced disease in monkeys, and also from the spinal fluid. The chief exponent of this work is probably Rosenow, of Rochester, who reports the cultivation of this streptococcus from these various sources, and who believes at the present time that this streptococcus represents a certain stage in the life cycle of the filterable virus. This opinion is not accepted by a rather large percentage of scientific workers. If it should be true, it is certainly a revolutionary development. We have to be prepared for revolutionary developments, and I suppose we can only keep an open mind until time proves or disproves this hypothesis. This filterable virus has been demonstrated, as I said, in the brain and cord of fatal cases quite regularly. It has also been demonstrated in the washings of the nasopharynx in patients suffering from the disease, and it is considered by most that the disease is generally spread by the secretions of the nasopharynx, either by persons who have had the disease, or by persons who are carriers of the virus. It is difficult to demonstrate this virus in nasal secretions or in washings from the nasopharynx, because when it is washed out in saline, any virus which might be present becomes so highly diluted that it is difficult to reproduce the disease in monkeys by its inoculation. It is therefore difficult to prove its presence, in contradistinction to the proving of the meningococcus in the nose and throat, which is fairly easily done.

The epidemiology of poliomyelitis and of epidemic meningitis is not at all dissimilar. They both affect small numbers of individuals, and younger individuals, and they run their course at certain seasons of the year; infantile paralysis in the summer, and epidemic meningitis in the winter and spring months. They both affect a larger number of males than females. They have therefore a number of points epidemiologically in common, but the proof of the presence of the virus of poliomyelitis is very difficult to make. Nevertheless, from the way the disease spreads, most of us are convinced that it is spread by carriers. As stated earlier, it has never been proved that insects spread the disease. Articles of food usually do not spread the disease, al-

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though there have been one or two small epidemics which seemed to be spread by milk. The virus of poliomyelitis remains viable in milk for a considerable length of time, and it is quite possible that the virus was spread by this means. But in general it is believed that the disease is spread almost exclusively by carriers, either those who have had the disease, or absolutely healthy carriers who have not developed it. It is certainly true that not infrequently when we see an isolated case in a somewhat isolated community we learn in going into the history that the patient some days before had visited a country fair or moving picture, or had gone somewhere where he came in contact with a much larger number of persons than he was usually in the habit of meeting.

When infantile paralysis was first described, only cases with paralysis received attention. Indeed in the early descriptions it was cases of paralysis in the chronic stages of the disease that were described. As time went on it became obvious that the virus did not always attack the central nervous system and result in destruction of the anterior horn cells of the spinal cord, with resulting paralysis, and the non-paralytic cases were first recognized by Caverly in 1896. Later Wickman described these cases even more at length. The virus of infantile paralysis has a special predilection for the anterior horn cells of the cord, and if they are sufficiently attacked to destroy or severely injure them we have the resulting paralysis. Other parts of the central nervous system may be attacked and the non-paralytic form of the disease result. There are signs of rather marked meningeal involvement, and yet the disease does not go on to paralysis. Then we have a certain number of cases in which there is an ataxia due to the invasion of other segments of the cord or of the posterior ganglion. In other instances the cord is attacked higher up, giving rise to the bulbar cases, cases with paralysis of the muscles of deglutition and respiration, which accounts for by far the largest percentage of the fatal cases. In view of the way in which the virus of infantile paralysis may attack different parts of the nervous system, we have various classifications. Wickman divided the disease into eight forms: the spinal form, the form resembling Landry's paralysis, in which the paralysis begins in the legs and spreads rapidly up the cord, finally ending fatally by involving the muscles of respiration; the bulbar type, in which paralysis may begin at the bulb and may attack only the muscles of swallowing or the muscles of respiration, or it may extend down. Wickman also described an encephalitic type of infantile paralysis. I think we have an encephalitic type in which the sensorium is especially attacked; the child is very stuporous and remains so for several days; the reflexes may be exaggerated; there may be convulsions. But I think many of the cases that were earlier described by Strümpell as the encephalitic type were probably epidemic encephalitis. The description that Strümpell gives is that of the type of case which at present is diagnosed as epidemic encephalitis. He described them as going on to mental retardation or deterioration, or moral deterioration, and having epileptic seizures lasting through life. They are quite typical of the syndromes of chronic epidemic encephalitis and do not suggest the after-effects of infantile paralysis, which after effects are usually limited to the paralysis of the muscles which have been most affected. Wickman also mentions the ataxic type in which there is rather marked ataxia as a prominent symptom; the polyneuritic type; the meningitic type, and the abortive type including the non-paralytic. This term, the abortive type, has been used rather unfortunate-

ly. I am perfectly willing to recognize the presence of a non-paralytic type of the disease. It has the same clinical picture and the same changes in the spinal fluid that most paralytic forms have, but it does not go on to paralysis. The abortive type of the disease is that in which there are very indefinite symptoms. Infantile paralysis occurs at the season when we are most likely to see gastro-intestinal disturbances in children, with fever, and I am unwilling to make a diagnosis of abortive poliomyelitis in every child I see during the time an epidemic is prevalent who has an upset stomach and a little fever. I can see no particular point in that diagnosis, but the non-paralytic type of the disease is a very definite clinical entity which I think most of us are willing to accept.

In the epidemic of 1916 we worked out a somewhat simpler classification of four groups: 1, The non-paralytic; 2, The ataxic; 3, The cortical or upper motor neurone type which will include cases of encephalitic poliomyelitis, and, 4, The subcortical or spinal, which is the classical type. This classification on an anatomical basis is fairly simple and workable. We see cases which represent mixed types.

As to the symptomatology, it should be pointed out that there are three types of onset. In the first place, there is a type of onset which formerly was talked about more than it is now. That is the type in which a child went to bed perfectly well apparently, and a definite degree of paralysis developed overnight with no prodromal symptoms. That there are such cases occasionally I think we cannot doubt. I think it is also true that this type of onset is comparatively rare. But I have seen and heard of cases which were under the most careful observation,—physicians' children showing no signs of illness, going to bed perfectly well and waking up with paralysis. The child may have had a little fever during the night, but there had not been a period of 48 or 72 hours with pre-paralytic symptoms which we see so frequently. There is a second type which was first described by Levaditi and later has been emphasized by George Draper in which the invasion occurs in two stages. The child is sick for two or three days with fever and gastro-intestinal disturbance. He apparently returns to health for three or four days, and then there is a second onset with signs of involvement of the central nervous system. This type of onset has not been in our experience a common one. It is more common than the sudden onset of paralysis without other symptoms, but by far the most common onset is that in which the progress of events is continuous. The child becomes ill with fever which is the most common and constant feature; there is usually hyperesthesia, and this is most noticeable along the course of the large nerves in the legs and arms. There is drowsiness alternating with irritability; there is usually headache, and it is more likely to be in the back of the head and neck than in the frontal region. There is quite often vomiting. A short time after these general symptoms it is noted that there is a stiffness of the neck and that the child cannot flex its head easily on its chest, and that when one attempts to flex the back, the child resists the motion. We get the same signs of meningeal irritation, only to a less degree, that we get in early stages of meningitis, and I think the pathology of the two conditions is exactly the same. It is due to inflammation of the meninges, which are stretched when the spinal column is bent, and the meninges extending out along the nerve roots are consequently stretched. These symptoms are not so marked as in meningitis because the inflammation is not so marked. There is ordinarily a Brudzinski and the early changes in the reflexes usually take the form of an ex-

aggeration of the deep reflexes. As the disease progresses the reflexes become diminished or lost or unequal, if paralysis is about to develop. Delirium and convulsions are comparatively rare. Children may show tremor even in those cases not of the ataxic type, but I think that tremor is not very much more common than it is in other instances of acute infections in children. There is no rash of any special diagnostic importance. Sometimes we see an erythematous rash of some type or other which is probably just a toxic rash. There may be constipation or diarrhoea. In 1916 diarrhoea was more common and in this last epidemic constipation has been the rule. If paralysis is to develop, it usually does so on the first to the fourth day of the disease. The percentage of cases in which no paralysis develops varies greatly in different epidemics, or at any rate, the extent to which these cases are diagnosed varies greatly. There is a great difference of opinion as to what the percentage is. Some people believe that the non-paralytic cases far exceed the paralytic ones, and from somewhat scattered reports it would seem that this is the case in this present epidemic. To what extent the non-paralytic cases are never diagnosed in ordinary epidemics is quite a question. I am sure that ordinarily a fairly large number of these non-paralytic cases escape diagnosis or at least escape being reported.

Of the aids to diagnosis, the most important is the examination of the spinal fluid. In poliomyelitis the spinal fluid is usually increased in amount, and there is usually an increase in the cells, running all the way from a very slight increase above normal, not more than 10 or 15, up to several hundred or even a thousand or more. These cells are in the majority of cases, 80 per cent. or more, mononuclears, but we do see a certain percentage of cases in which the predominating cells are polymorphonuclears. It has been sometimes stated that early in infantile paralysis the cells are polymorphonuclears, and that as the disease progresses the cells become changed to mononuclear lymphocytes. This is probably due to careless reading of a paper by Peabody, Draper and Dochez, in which they say no such thing. What they do say is that the cells may be predominantly polymorphonuclears, but in the majority of cases the cells are mononuclears. The protein is slightly increased, and the sugar is normal or high. There is nothing in this spinal fluid picture on which we can put our finger and say "this is surely a case of infantile paralysis." We can only do that in diseases where we can demonstrate a definite organism, as in meningitis. But such a spinal fluid as I have described does separate the case quite definitely from the meningeal irritation that we so frequently see with just as much stiffness of the neck and back, and just as much Kernig, and very much the same clinical picture, in various acute infections in children, pneumonia, gastro-intestinal attacks, and so on. In those conditions the spinal fluid is usually entirely normal with no increase in the cells or protein. The spinal fluid I have described in poliomyelitis also separates the disease from the early cases of meningitis in which we are able to demonstrate the organism in the spinal fluid, and in which the sugar is usually diminished. It also divides it from the great majority of cases of tuberculous meningitis in which the sugar is low and in which the tubercle bacillus may be demonstrated. In poliomyelitis occasionally a film or web forms in the spinal fluid, just as it forms in tuberculous meningitis, and the formation of the film should not lead one astray in reporting on the examination.

One point should be mentioned. that occasionally in cases undoubtedly poliomyelitis with a typical history, and paralysis, we find a perfectly normal spinal fluid

picture. That occasionally happens. It is rare, but we do see it. For that reason I have no doubt we miss a certain number of cases of non-paralytic poliomyelitis in which I would be most unwilling to make a diagnosis definitely in the presence of a normal spinal fluid. Since we see spinal fluids in cases of paralysis that are normal, it is reasonable to suppose that we see them in cases without paralysis, but to be absolutely fair I think we would necessarily refuse to make a diagnosis of non-paralytic poliomyelitis unless we got changes in the spinal fluid.

The mortality in different epidemics varies widely. In 1916 it was more than 25 per cent. in New York, and in this epidemic it is around 10 per cent. Whether that is due to better diagnosis and to the recognition of more non-paralytic cases, or whether the disease has really been milder, I am unable to say.

The question of treatment is a very complicated one. In 1910 Netter demonstrated a point which I have referred to, namely, that the serum of patients who had recovered from infantile paralysis possessed the power to neutralize the virus, and he therefore suggested that if the serum of these convalescent patients was used early in the progress of the disease, paralysis might be lessened or stopped. Since 1916 a great deal of work has been done with convalescent serum. In different parts of the country it has been used in different ways. In Massachusetts and here in New York it is usually given intraspinally, combined with intravenous or intramuscular injection. A certain number of workers have reported apparently very favorable results with it. It has been recommended only before paralysis has developed, and it has been reported that paralysis failed to develop in a certain number of cases, 35 to 40 per cent, and that it was less than in cases where the serum was not used. In California and in Canada they have used the serum only intramuscularly and have reported equally good results with that route.

To continue with the discussion of the convalescent serum, some of us have remained rather doubting Thomases with regard to the value of the serum. We saw quite a good deal of it used in 1916. We also saw many cases in the pre-paralytic stage where no serum was used and no paralysis developed, and we wondered what would have been the showing had a control series of cases been run. In medicine of course no treatment can be much relied upon unless we do have a control series of cases. If a group of physicians go to a town where the disease is prevalent and make it known, as they should, that here is a remedy which if applied early will prevent or ameliorate the disease, then every parent will bring every sick child to the doctor, and as a result, we will have an epidemiological picture practically 100 per cent. correct. Nothing in medicine is ever that correct, but we will have a very complete picture in that town, whereas in some other town where that method of treatment is not available, many of the non-paralytic cases will fail of diagnosis or of being reported, and we will therefore be comparing the results of one town with all the cases diagnosed with the other town in which only the more severe forms of the disease are discovered, and such a comparison is obviously very unfair. It has always seemed strange to me that the serum may be used in so many different ways, with apparently about the same result, and what has seemed strangest of all to me is that the streptococcus serum which Rosenow has developed by the inoculation of horses should give just as good or better results than the convalescent serum, in the face of the fact that it has been shown that the anti-streptococcic serum of Rosenow does not have the power of neutralizing the poliomyelic virus. During the last two or three years very important studies have been

carried out through the generosity of Mr. Jeremiah Milbank, and certain interesting developments have emerged from this intensive study which has been done here and abroad. One of these is that horses may be immunized by inoculating them with the virus of poliomyelitis and the serum thus produced in the horses that respond favorably (not all horses do respond) possesses the power of neutralizing the virus in a rather higher degree than does the serum of those who have recovered from the disease. The horse serum may be further refined so that it has about five times the neutralizing power of ordinary convalescent serum. If the convalescent serum is of value in poliomyelitis, then this horse serum should be much more valuable, and would have the added advantage of being easily obtained and transported. In this present epidemic in New York City I think one important point will be proved, at least a definite light will be thrown on it. At times the supply of convalescent serum or horse serum was not sufficiently abundant so that all cases seen in the early stages could be treated. When the figures have been collected and correlated, we shall be able to compare a rather large group of cases seen in the pre-paralytic stage and receiving no treatment at all, except lumbar puncture, with another large group of cases seen in the pre-paralytic stage and receiving convalescent serum or immune horse serum in various ways, so that we shall know rather definitely whether serum is of value. If it is of value, we can make every effort to see that convalescent or immune horse serum is everywhere available, and if it is not of value in treating the disease after the symptoms have developed, we can drop it and work along some other line. Undoubtedly convalescent serum or horse serum would be of value in establishing for a short time a passive immunity to the disease, but until we have some method of determining which people are susceptible, and which are immune, that method of passive immunization is rather impracticable. I mentioned earlier that the great majority of adults who have had no history of infantile paralysis do show in their blood serum neutralizing powers to quite a high degree, so it has been suggested that the blood of normal adults, as parents, be injected during the periods of epidemics to afford protection from infantile paralysis. Of course it is obvious that in times of epidemics children should be kept away from crowds, and should be kept in the best possible physical condition.

One point which is perhaps of value: it has been demonstrated that the normal nasopharyngeal secretions contain a substance that is more or less virucidal for the poliomyelitic virus, and it has therefore been suggested in times of epidemics that one should not use antiseptic solutions, because these tend to destroy the natural virucidal power of the secretions. If one wants to use anything at all, normal salt solution is better than antiseptics. It has been shown in this recent outbreak and even before this that some of the respirators are of great value, and may be really life-saving devices in certain of the bulbar cases in which the mortality is so high. These cases constitute the largest percentage of our mortality in infantile paralysis, so it is of the greatest importance that respirators should be readily available in times of epidemic.

Another point which we learned in the epidemic of 1916 and which cannot be too strongly emphasized is that the early proper orthopedic care of patients having paralysis is of the utmost importance. As soon as weakness or paralysis of muscles has developed, the patient should be under the care of a competent orthopedist so that the paralysed muscles will be put at rest in such a position that they will not be stretched or contractures

result by the pull of unparalysed muscles. After all indications of inflammation have subsided, passive exercise, massage, and other methods of treatment may be judiciously used. The proper orthopedic care of the paralysed muscles from the start is of the greatest possible advantage in the return of the impaired function. I suppose there is no disease which strikes terror to the heart of most parents as does poliomyelitis, and there are certain points that they should know. One is that a very large percentage of children are immune to the disease. Secondly, we are perfectly sure that in a large number of cases the disease does assume a benign form without resulting paralysis. Thirdly, of the cases with paralysis, a very good restoration to function may be obtained in a large percentage of the cases if proper orthopedic care is used early.

45 Gramercy Park.

#### Discussion

DR. HARRY EATON STEWART, New Haven: It was a very great pleasure to hear this paper, and I was struck at once with how vastly medicine has grown, and why we need specialists, for Dr. Neal told me many things that I should have known, and about which I should have been able to instruct parents who are consulting me about conditions this summer. On the other hand, many of those who know the epidemiological side of the situation are not prepared themselves to help in the orthopedic care of the patients, but can merely draw attention to the need of the orthopedist or physiotherapist as to what should be done in the early after-treatment. From our point of view massage and passive motion are of extremely doubtful value if used at all. Dr. Galland spoke so well about this subject before that I am sure he will add a great deal to your knowledge tonight.

In considering physical therapy and its possibilities, there are two or three things that come to mind. First, the widely held belief that nothing can be done in the active stage. It has become the consensus of medical opinion that in the active stage rest support should alone be used. It has been brought out by Bordier of Paris years ago that the early use of *x-ray* offers a valuable and probably logical means of help. The well known effects of *x-ray* in reducing swelling offer a very possible help in preventing the slow pressure destruction that occurs outside of the direct toxic destruction of the anterior horn cells. Another attack on the same problem has been suggested in the way of diathermy and static Morton wave. No measure in physical therapy was more exploited than static. No measure to-day, in our better knowledge of its possibilities, offers more help in deep tissue decongestion than does static. The Morton wave applied at 500,000 to 700,000 volts offers an advantage and it is possible that it may affect the edema which is causing so much pressure around the inflammatory area. To prove such a thing is extremely difficult, for these machines and particularly trained physical therapists are rarely associated with contagious hospitals, and as Dr. Neal brought out, any measure to be of value in infantile paralysis must be checked with a long series of control cases, but this method is logical and it is worthy of some consideration.

I happened to be in orthopedics and interested in this subject in 1916, and was impressed with three different schools of treatment in the after-care. The group around Boston was depending almost entirely on re-education. The group around New York was using stimulative electro-therapy, and another group out West used what they called prolonged "baking". The term "radiant light and heat" or superheated dry air should be used instead of "baking". The more we study the situation, the more it looks as if each of these methods was reaching one prominent indication for treatment, and that the best present treatment lies in combining these methods to get the maximum benefit in each case. I saw some of the most painstaking, careful, and skillful motor re-education done in Boston a year ago that I have ever seen, on limbs that were cyanotic and cold, with circulation perhaps two-fifths normal. Those of you who have had any experience in physical education know that no trained athlete in the pink of condition will attempt to run a race without a thorough preliminary warming-up. How is it possible for a child to do maximum work where the circulation is so obviously abnormal? We may use radiant light, infra-red lamps, hot water, paraffin baths, or what you will, but some form of superficial heat, followed by some form of adequate deep heat, should be used. The best deep heat is obtained by

diathermy. We had a practical demonstration of that in 1922, and a number of the parents mentioned the fact that the children's limbs never seemed cold after two or three treatments with heat, and I am certain that a permanent increase in circulation was present after that treatment. Increase the nutrition first, for some increased power must come from the increased nutrition.

I would put second the type of work defined by "re-education". We must keep the motor pathways alive. Passive motion will not do it. Assistive and active motion when the child's acute condition subsides as far as possible is the only thing. We see a certain amount of immediate paralysis due to pressure, as we see it in hemiplegia in the aged, where pressure is later relieved by absorption, and it is necessary to stimulate the child to a conscious effort at re-education if function is to be regained. Otherwise we have a hysterical or "functional" paralysis superimposed upon what was a real paralysis. With muscles having less than 10 per cent. of the normal power, the child cannot make any headway at all, and here comes in the value of the modified direct current, but never the interrupted galvanic. I have heard many a surgeon say to a parent: "Whatever you do to a child, don't let anybody use electricity on him", when the right forms of electricity are the things to use, but somewhere the surgeon had seen the whole innervation to a group of muscles completely destroyed by too much interrupted galvanic. It is all right for muscle testing, as for example moving fracture ends to get crepitus is the way to make a diagnosis, while treatment by fixation is diametrically opposite to this. A small amount of sinusoidal or wave galvanic stimulation is the ideal method.

Massage used to be one of the bulwarks of the after-treatment of infantile paralysis. Twenty years ago it constituted, with heat, the main part of physical therapy, and unfortunately to-day still constitutes that in too large a proportion of the minds of the profession. It has been stated that massage increases circulation. But it does not. The only thing that it can do is to increase return circulation, relieving lymphatic stasis and venous stasis. It cannot bring much more arterial blood to a part. I do not believe we can increase muscle tone to any extent with massage. In poliomyelitis we have no edema to remove. We have atonic and atrophic muscles. What massage may possibly accomplish can be so much better accomplished by the contractile galvanic currents that massage has little place in treatment. If you are trying exercises, you are putting a good deal of work on the muscles. Far better than too long massage or too much exercise is a little massage, a few waves of the contractile galvanic current, and a little exercise. That, preceded by the effort to increase the nutrition to the affected part by heat, is attacking the problem from a number of angles. We have already plenty of experience to show that we have results far superior to those by the use or over-use of one method, instead of attacking it from several angles.

**DR. WALTER I. GALLAND:** It was a privilege to listen to Dr. Neal's exposition on a very difficult and perplexing aspect of poliomyelitis—the epidemiology, treatment, and prevention of this disease. As orthopedists we feel rather helpless in a discussion of the disease as far as these points go. Our task is to take a patient who has been injured by the disease and to attempt to rehabilitate that patient in so far as possible. I feel very strongly that at the outset we must delete the word "cure" from our vocabulary, for in very few cases presenting any degree of paralysis do we actually cure the patient. We ameliorate a condition which has been imposed on the organism, sometimes with eminent success, sometimes with not so great success, but in most cases we can rehabilitate the patient to the extent that he can again become a producing economic factor in the world, and that is the most important consideration.

When we first receive a patient who has been a victim of this disease, we as orthopedists cannot dissociate the acute stage of the disease from the chronic. The two phases glide so gradually into each other that there is no distinct dividing line, and our task of rehabilitation begins with the first symptoms of paralysis, and here we are in many cases faced with a very difficult situation. The popular impression that this disease is manifested entirely by the paralytic symptoms is erroneous. There are very troublesome sensory disturbances manifested by pain which defeat our initial efforts to overcome or correct or prevent deformity. These patients have excruciating pain. In some cases this pain imposes a great difficulty upon us in preventing deformity, because deformity is produced by several factors, one of which is the over-action of the unopposed muscle. The patient has pain in the extremity. Such pain produces extreme discomfort when the extremity is handled. Therefore if the patient lies

in bed with the foot hanging down, which is a very usual deformity—dropfoot—and we attempt to push up that foot in these cases showing hyperesthesia the simple pulling up of the foot will elicit excruciating pain. If we attempt to maintain it at a right angle, the tension on the unparalysed active muscle causes a continuation of the pain, and we must, unless we wish to keep the patient under opiates, release that pressure which is causing the pain. We have, as Dr. Stewart has pointed out, several methods to overcome this symptom. An important one is the application of heat by radiant therapy, and absolute rest. The patient must not be disturbed, must not be moved, and at times immersion baths in warm salt water may produce a gratifying amelioration of this symptom, but if it takes a week or two or three before we can attempt our orthopedic handling, the patient may have already developed a deformity, and therefore we must very early attempt to get rid of this complication. The use of x-ray in persistent cases of hyperesthesia is most valuable. We ray the involved spinal segments. The pain may be referred to the extremity. The pathology is in the spinal segment. At the Hospital for Joint Diseases we have had considerable experience with this method which we took up in 1923-24, and we have had several of these hyperesthetic cases to deal with. We found that after one or two treatments the pain sometimes subsided very rapidly, so that we were able to begin our orthopedic handling. This is a very important factor.

Our next problem is to prevent deformity. Deformity is caused by several factors. We do not commonly see every muscle in an extremity paralyzed. We have in every extremity antagonist groups of muscles; a group of muscles that will extend the foot, and a group of muscles which opposes these, to flex the foot. In a normal individual these muscles are balanced; therefore we are able to hold our foot in a natural position or as we exert the action of one muscle or the other, we can flex or extend the foot. Also we have a group of muscles which adducts the foot, and an opposing group which abducts the foot. One of the predominant functions of muscle tissue is that it is always in a state of contraction which we call muscle tone, that is, every normal muscle, properly innervated, is in a state of contraction which is called tonic contraction; therefore the muscles unparalysed being constantly stimulated by impulses coming from the cord are constantly contracted, and if they are unopposed, will produce a deformity by reason of that contracture. We have two methods to prevent or overcome that contracture: plaster of Paris, which is applied in what is popularly called casts, and braces. Plaster of Paris is less expensive and more easily applied. Braces are perhaps somewhat more expensive and more difficult of application, and perhaps not as satisfactory in the majority of cases as plaster of Paris in the early stage. Plaster of Paris must be applied with a view to permitting a part to remain in that position which will permit of return of what we term tonic contracture of the paralysed muscle. If, for instance, the muscle that raises the shoulder is paralysed, we attempt to put that shoulder in a position in which the origin and the insertion of this muscle come into as close contact as is anatomically possible. That is, in case the abductor of the shoulder is paralysed, we place the arm in abduction and hold it there. That stretches the adductor muscles and permits the paralysed muscle to assume the shortest possible length. The paralysed muscles are not under any tension. The muscle which is constantly stretched is virtually paralysed. Even a normal muscle can be under laboratory conditions so overstretched that it loses its capacity to contract. Also a fatigued muscle loses its capacity to contract. If my shoulder is paralysed, and I permit my arm to drag constantly on the muscle group which supports the shoulder, I am over-stretching and fatiguing the muscle. Therefore we place these parts in plaster-of-Paris casts, with the extremity so placed that the paralysed muscles are in so far as possible in a maximum state of relaxation. If all of the muscle groups of the extremity are paralysed, that is, if both groups are completely paralysed, we place the extremity in the mid position so that neither one or the other group is over-stretched. It is commonly practiced in our orthopedic hospitals to completely encase the patient in plaster. That is, I believe, somewhat of a misconception physiologically. I believe our plaster should be so applied that we can cut the plaster into two sections so that these sections can be removed. We make a box out of the plaster. The extremity can be held in the corrected condition and the plaster can be at any time removed for the purpose of inspecting the extremity, giving treatment, and replacing the extremity in the plaster.

Now as to braces. Braces are used largely in that portion of the convalescent stage where we wish to get the patient in an upright posture again. Some braces are applicable in the

early convalescent stage, particularly what is known as the "gas pipe frame", which is used where the back muscles are paralysed, but in most cases we use braces for the ambulatory treatment of the patient, and here we are up against a great difficulty. The brace-maker is a mechanic, and the popular conception is that the paralysed patient can go to a brace-maker, and he can make a brace. I believe that many physicians refer patients to a brace-maker to make and design a brace. A brace is a mechanical instrument; it is a machine; it must be purposeful. It must relieve some portion from strain, and receive some of the strain of the body weight or counteract some strain which is tending towards deformity. Otherwise it is just extra weight carried around. We can construct a brace for the leg in which there is a ring, the so-called Thomas ring, with a pad which reaches up under the gluteal fold, and upon this brace which is carried down into the shoe the patient can virtually sit as he walks. The full weight of the body does not come on the extremity. The patient can swing the leg, but at no time does the weight of the body fall on the weakened muscle group. The question comes up, should we provide motion at the knee or at the ankle, and these questions are questions which require a definite anatomical diagnosis of the paralysis present. Also we are often faced with the situation that the physician sends the case to the brace-maker to have a deformity corrected by means of a brace. As a general rule we may say that a brace cannot correct deformity. We must prevent the deformity, or we must correct the deformity prior to the application of a brace. A brace is a retention apparatus. A brace retains the position, but cannot correct a real deformity.

I might call attention to the deformity we see so frequently in the knee joint, where an attempt is made to correct it by a brace. That is the flexion deformity of the knee. The muscles which extend the leg are paralysed; the muscles behind the leg are contracted. On passive motion we are unable to fully extend the patient's knee. If the patient comes down on that extremity the knee goes out from under him like a partly closed jack-knife. With these patients walking around with flexion contractures of the knees, if a brace is designed to prevent the leg from collapsing, it must exert pressure somewhere around the leg, and it is exerted at the calf and the thigh muscle, and the muscle which we are trying to protect is injured, and these patients walk around with legs virtually hanging in the braces and injuring their muscle with every step. If you correct that contracture of the knee, and make an extensible knee and put a brace on merely to stabilize it, then you give that patient an extremity on which he can walk; you give him a brace which is not injuring the extremity, and you benefit that patient.

As far as the back is concerned, that is a most important consideration in poliomyelitis. If you have a paralysis of the back muscles, the patient must be in the recumbent position for a long time. The upright posture must be resumed very carefully. You cannot control the spine by a brace as you can an extremity. The spinal column is a flexible column, and you cannot attack it directly by braces. You can only indirectly support the spine by a device which exercises some pressure on the ribs, some pressure on the pelvis, and holds up the shoulders, but all of those parts are only indirectly attached to the spine. You are attempting to support a movable, flexible column by pressure on a series of movable joints, and it is an impossible problem. You can provide a certain amount of support for the spine by braces, but if it shows an increasing tendency to deformation, then you have to resume the recumbent posture, and to maintain it so long as you feel there is some chance of return of muscle power, and then if the spine is severely paralysed, you must resort to some operative measure to stabilize the spine.

There are so many aspects of the situation that we could go on and on. At the end of a period of two years, if the case has been properly treated by the usual methods of rest, physical therapy, and graduated exercise, and you still have residual paralysis, then you must consider that the maximum muscle power has been regained, and you come face to face with the problem of operative correction. Again we are faced with the perplexing question of how we shall handle the patient who is expecting a cure. We cannot, do not, cure by operation. We have several forms of operation. One is the method of tendon transplantation. If for instance the muscles which invert the foot are paralysed, the tibial muscles, we may still retain on the other side of the foot two muscles which evert, the peroneal muscles, unparalysed. Muscle transplantation should be looked upon as a re-distribution of muscle balance. You take one of those peroneals and transplant it to where the paralysed muscle inserts, and then you have again balanced your foot, but if you are too enthusiastic and take both the peroneals, you again unbalance the foot. The method of muscle transplantation has been a

disappointment for it does not work over a long period of time. You cannot impose too much work on a weakened muscle, so that where we have a weakened extremity we have to stiffen the joint of that extremity, in order to substitute a bony rigidity in place of the muscle action. If you stiffen the joints of that foot, you can again place weight on the foot and bear it securely. The only objection is that it makes a very rigid extremity, and unless it is wisely used it is rather a handicap to the patient. We are now combining muscle transplantation with the stiffening operation with very nice results. We stiffen the spine, using the spine to make a rigid column, but after all is said and done, we have to be modest in what we can do; we have to realize that these operations are in a few instances dangerous, are always a psychic shock, and the patient, impatient of delay, goes around always seeking a little more improvement, and there is a point reached in every case where we have come to the limit of what we can do. We cannot make every patient walk without a limp. A limp is due not only to shortening of the extremity, but to asymmetrical muscle action, and we must discourage patients in many instances from seeking further operation. We must know that there is a limit to what we can do, and if we can relieve the patient from wheelchair invalidism, as we can in most cases, if we can cause a patient who goes around wearing a brace to throw away that brace, or to throw away his crutches, and get along without them, we have accomplished a great deal for that patient. We must explain to the patient that absolute cure is beyond our capacity, and that our aim is to permit him to go around freely and to earn a living, but we do not promise, and we do not attempt, to enable the patient to walk without a limp, to be perfectly normal and symmetrical, to make a thin leg fat. These are impossibilities, and the public and the profession should realize what our limits are, and not expect too much from us. We are not miracle workers.

DR. JACOB SOBEL: I must confess that I did not expect to take part in this discussion, but came merely to listen and to learn, and I always learn when I listen to Dr. Neal. I have had occasion to be associated with the Health Department for a great many years, and knowing of Dr. Neal's significant work there, I jotted down a number of notes, more for the purpose of taking them home and going over them, than for the discussion of this presentation. Dr. Stewart and Dr. Galland have a great advantage over me in that they are in a position to discuss a phase of the subject somewhat foreign to the special field in which Dr. Neal is engaged. Being a pediatrician, I must discuss the subject along lines similar to those of Dr. Neal, and since she is such a mistress of her subject, there will be little for me to say. You will pardon me if what I tell you is somewhat of a repetition of what she has said, and I do so more in trying to impress these things on my own mind and possibly on yours than with any idea that I can add anything to the subject.

The difficulty in the control of poliomyelitis was definitely expressed by Dr. Neal, and when we consider that the etiological factor—the filterable virus—has not been cultivated, that we have no susceptibility test, that we have nothing to produce permanent immunization, you can readily realize the difficulty of control. I believe there is a certain amount of danger in the fact that Rosenow has told us that he has isolated a causative streptococcus, because there are people who believe in it, and there are some manufacturers who are putting out a serum with the idea of using it as a protective agent in poliomyelitis with practically no results. The whole subject of the control of poliomyelitis is more or less misty, and it is for that reason, groping in the dark as a great many of us are, we have fallen back on a different phase of the subject, one that has interested me. You know that Dr. Draper places a great deal of emphasis on the constitution of the individual, and that lately Burrows has advanced the theory that the condition of poliomyelitis is really an hypertrophy or hyperplasia of the lymphatic structures of the body. For a great many years it has been my observation that the majority of children suffering from poliomyelitis and tuberculous meningitis were blondes, and a certain type of blonde, the type that the elder Gross used to call "angel child", the "peaches and cream" type of child, the blue-eyed, soft-skinned, silken-haired one, and usually in my experience the type of child who had large tonsils and adenoids. Whether that is the type of child Dr. Draper has in mind, I do not know, but if those of you who have had any experience with the disease will think over the number of cases you have seen in colored children, the number I dare say will be very few. I do not remember five cases in colored children that came to the Hospital for Joint Diseases for after-care of infantile paralysis, in ten years, and we have seen a great many cases

in that time. If I remember rightly, in the 1916 epidemic, in analyzing the situation, the Health Department found very few cases among colored children.

I was rather disappointed, if I may say so, in Dr. Neal's bringing into view the old classification of poliomyelitis into the seven types. I realized later why she did that. She did it to emphasize the more practical classification which she mentioned: namely the non-paralytic type, the ataxic type, the upper neurone type, and the spinal type; but even at that it seems to me better that the general practitioner should look upon this disease, as has been emphasized in the publications of the Health Department, and for which Dr. Neal is probably responsible in large measure, as a general systemic disease with different stages of (1) general invasion or infection, (2) meningeal irritation, and (3) paresis or paralysis of the muscles, if the latter takes place. I have been impressed in this epidemic with the relatively large number of cases which have gone through what Dr. Draper pleases to call the "dromedary" stage. The children are ill with indefinite symptoms for three or four days; then there is a free interval of three or four days to a week, after which the symptoms of poliomyelitis appear, but by far the larger number of cases are the progressive ones, as Dr. Neal said.

I wonder if Dr. Neal has noticed that in this epidemic there were a large number of cases with higher temperatures than in other epidemics. It is customary to speak of poliomyelitis as a disease in which the temperature is 101 to 102.5. I have seen cases with temperatures of 103 or 104. That was not an unusual occurrence.

I have not seen in this epidemic any case of infantile paralysis with convulsions—I mean in straight anterior poliomyelitis. I do not mean the cases classified as polio-encephalitis. In fact, I have never seen a case with convulsions, and that seems remarkable in a disease which involves the cerebrospinal system. I believe that this fact is mentioned by Dr. Leake of The United States Public Health Service.

Dr. Neal cleared up in my mind a question that was bothering me in regard to the spinal fluid. I have had three cases in which the spinal fluid was normal, and yet there was some rigidity of the neck and some spinal tenderness. There are a number of cases of infantile paralysis in which the spinal fluid is absolutely normal at the beginning. There is no doubt about that, and the question arises whether spinal tapping or lumbar puncture is not a little overdone. I can understand that it is absolutely necessary when the question of differential diagnosis is involved, and when it is a question whether we are dealing with poliomyelitis or cerebrospinal meningitis or tuberculous meningitis and particularly meningismus which follows pneumonia, gastro-intestinal and other diseases, but just to perform lumbar puncture for the sake of performing it when the clinical signs and symptoms are clear is to my mind not as necessary as has been said. It has had, however, one advantage, in that it has educated the public to the fact that lumbar puncture is not a major procedure and that doctors may resort to it without any special danger. Nothing said here is intended to minimize its therapeutic indication and value.

I noticed that Dr. Neal was very circumspect and rather reluctant to talk on the subject of serum therapy, at least therapy with convalescent human serum. I believe, if there is one thing the medical profession is entitled to know, it is some expression of opinion from the authorities who have used the serum as to whether or not it is effective—I do not say whether or not it is a specific, but whether it is effective. My own impression of the subject, and the impression I gained from Dr. Neal is the Scotch verdict of "not proven". If the truth were told about the use of this serum intraspinally I am afraid that some sad stories would come out. I have good reason to believe that several deaths have occurred as a result of its use in this way, and while names such as status thymico-lymphaticus have been used for the cause of death, it has been more directly attributable to meningeal irritation than anything else. With the intraspinal use of this convalescent human serum I have seen high temperatures, an increase in the cerebral symptoms, convulsive seizures, increased rigidity of the neck, altogether a picture that is terrifying, one which would not make us inclined to recommend the use of convalescent human serum intraspinally. Since the horse serum is from five to six times as potent as human serum, as far as its antibody content is concerned, this too seems to me a question which would require a great deal of courage before one would use it intraspinally.

The records of the Health Department show that in this epidemic about 17.5 per cent. of the children affected became paralysed; that is, 82.5 per cent. approximately remained non-paralysed. That is an interesting phase of the situation. There is no question in my mind, and I don't think there is in Dr. Neal's mind, that the profession has been educated

more in the diagnosis of poliomyelitis in this particular epidemic than in any previous one in the sense that they have been impressed with the fact that paralysis is not necessary for a diagnosis. There is no question in my mind that despite the fact that in the 1916 epidemic we had some 8300 cases reported, there were many more cases than that in New York City at that time. It may be that there were more than have been reported at this time, but certainly fewer pre-paralytic cases escaped detection this year than in the epidemic of 1916, so that the mortality rate, comparing one epidemic with the other, is not fair. In the 1916 epidemic, if a larger number of cases had been reported, the mortality then would have been less than 25 per cent., and if we had not discovered this time the larger number of pre-paralytic cases, our mortality would have been higher than 12 per cent. In the 1916 epidemic there was a series of 42 cases reported by Schwartz, in 21 of which convalescent human serum was used, and in the other 21 no serum was used. In the 21 cases in which the serum was used, 14 cases became paralysed, and in the others, where no serum was used, only 9 became paralysed. I am not advancing this as an argument that because the large number of paralyses occurred in the cases in which the serum was used we should do away with the serum, but I do feel that the value of serum has not been sufficiently established to warrant its widespread use. I feel that the public has been led to believe that this serum will do a great deal more for them than it really will.

One word about the passive immunization with donor's whole blood. Dr. Neal has spoken of a large section of the community being immune through exposure, and that there is a certain amount of poliomyelitis antibody content in the blood of many adults. It is true that this method is not quite analogous to measles, where the vast majority of adults in an urban community have had measles, and where we can be pretty sure that they have antibodies in their blood. It is quite probable that 50 to 60 per cent. of adults have poliomyelitis antibodies perhaps sufficient to prevent a child from getting the disease. After all, there is a lot to that possibility from the standpoint of public psychology. I can visualize an epidemic of this kind where the mothers and fathers will grasp every opportunity to protect their children, even if it only offers a remote hope of protection. What have we to offer them now? We have nothing; but if during an epidemic we could say: "I will take 20 c.c. of blood from the mother and 20 c.c. from the father, and I will inject it into your child, and if I do this every four weeks, the child *may not* contract the disease", I doubt whether many parents would object. Would you not take advantage of that one possibility? It is worth while, and while I do not think it would always be effective, it is certainly the best that we have to offer at the present time.

A very important question has been raised by Dr. Neal, and that is this: During an epidemic of poliomyelitis the portal of ingress and egress of the causative agent is the nasopharynx, and we as practitioners are pestered with parents who ask for a nasal wash or a mouth wash, and there is certainly a great danger of removing the normal protective secretions in the nose by the use of any strong or irritating nasal wash.

The use of respirators has been mentioned by Dr. Neal. Even if they are expensive, costing from \$2500 to \$3000, certainly any organization that attempts to treat cases of bulbar paralysis should have one. I want to call attention to the fact that this respirator is not universally successful for all types of bulbar paralysis. If the disease involves the intercostal muscles then the artificial lung, as it has been called, will be very helpful, although mortalities with the use of the respirator are not uncommon.

I want to express my thanks to you, Mr. Chairman, for having been called upon to take part in this discussion, and also to Dr. Neal for the great pleasure I have had in listening to her.

**DR. LEON T. LEWALD:** The x-ray has been mentioned among other things in the discussion. The Secretary was worried as to where the lawyers come in on this symposium. Perhaps the question of quarantine and the powers of the Board of Health to enforce the same might be brought into the discussion. The other day, when stopped by a traffic light, the policeman on the corner came over to me, seeing the insignia on my car, and said "Doctor, there is a case of infantile paralysis on the same floor where I live. Can't you get the Board of Health to take this case away, because I have two children?" and I replied just what Dr. Neal has told you, that the danger of contagion is apparently not such that ordinary contacts are dangerous. Perhaps Dr. Neal will say a word more in regard to that. Just the opposite thing happened this afternoon; a very fond mother said to me "Does my child have to be taken to Willard Parker

because it has poliomyelitis? Can't it be treated at home?" so that here you have two sides of the question of quarantine.

Mr. West made a very interesting remark to me when the orthopedic surgeon was talking, which reminds me of a case in court in which the doctor on one side was being questioned as to the meaning of orthopedic, and he said that it was derived from *orthos*, meaning to straighten, and *pedis*, foot, and the very learned judge spoke up and quite correctly said "Not at all; it is from *orthos*, to straighten, and the word *pais*, meaning child, and it is the treatment of straightening the deformed child," and now that has been extended to include adults as well.

In the discussion, the x-ray has been brought into the subject, and I would like to illustrate three cases in *differential diagnosis*. This first radiograph is one taken during the 1916 epidemic, in which a child was brought in, saying that it would not use its leg, and that the leg was exceedingly tender, a symptom which has been mentioned here to-night as often present in poliomyelitis, and the family knew of no definite injury. Somebody had suggested that the child might be coming down with an acute joint disease, and to have a radiographic examination. In the first front view we saw nothing to indicate a joint disease. Having taken a side view, however, we decided that the child must have fallen out of bed during the night and fractured its leg, and you see the fracture line here in the femur, which settled the diagnosis. It was rather dramatic, because they had an ambulance outside to take the child to Willard Parker Hospital as a case of poliomyelitis.

During this present epidemic I have had charge of the x-ray work at the Willard Parker Hospital, and a great many problems were solved in differential diagnosis by a routine use particularly of the x-ray examination of the chest. Dr. Neal has mentioned that other conditions, such as pneumonia, and in children usually broncho-pneumonia, may give a fever and general irritability, and so on, which may account for the symptoms which might simulate poliomyelitis. We had one case in particular in which it was a question whether the child had meningitis or poliomyelitis, and the x-ray immediately detected in a most dramatic way the presence of miliary tuberculosis. Scattered throughout both lungs were numerous tubercles. It was then decided the child had tuberculous meningitis, a fatal complication. The father of this child was proved to have chronic tuberculosis, and it was from this source that the child probably contracted the infection. Post-mortem examination confirmed the x-ray diagnosis. If anybody has ever questioned before the possibility of the x-ray showing individual tubercles, this case proves that the x-ray will actually detect separate miliary tubercles in a properly exposed x-ray film.

We had two other cases occurring at a time when there was no epidemic, in which the children had very tender extremities, and possibly some other associated signs that made it possible that they were suffering from poliomyelitis. If you have ever seen a case of infantile scurvy you will realize how tender the extremities are, particularly about the joints, in this condition, so that this mistake in diagnosis was a very easy one to make. The x-ray cleared up the diagnosis by showing evidence of scurvy, and it was further proven through the presence of these subperiosteal hemorrhages, which a little later showed infiltration with lime salts, and proved conclusively the diagnosis, besides the cupping of the bone, which is characteristic of scurvy, that this child had infantile scorbutus, and not infantile paralysis.

There was another case in which the early films showed the appearance we recognize as scurvy, or possibly a combination of scurvy and rickets. A little later in the course of the illness, eight days, the diagnosis was absolutely confirmatory of infantile scorbutus, shown in the x-ray by the presence of lime salt deposits along the edges of the bone.

The only other point I wish to discuss is the question of treatment by x-ray. A letter was sent to the Commissioner of Health, Dr. Wynne, asking if x-ray treatment could be utilized at the Willard Parker Hospital. I was then asked to express an opinion on the subject, and said I was willing to undertake the treatment, but it became a question of just what Dr. Neal has told you in trying to solve the question of serum treatment. Dr. Tolle, the Director of the Willard Parker Hospital, told me that they had subdivided the groups into those who were to receive serum treatment, and those who were not to, and they were grouped in such a way that it would have confused the issue if we had treated a series with x-ray. However, a series is being treated by Dr. Galland, and it is probable that some definite results can be determined from those cases. Bordier, as far back as 1911 in Paris, suggested and used the x-ray in the treatment of chronic poliomyelitis. Various observers have used

x-ray in acute cases, and I will read one or two of the differences of opinion regarding its value. One man says: "I have no hesitation in stating that children treated by the Bordier method have the best chances of recovery with the fewest sequelae". Here are some of the contradictory views: Delherm says he wishes to see this method discussed more freely and a large series of cases reported, as it is very difficult to determine whether possible natural recovery was about to take place, or whether the x-ray has reduced the swelling and edema and relieved pressure, and there has been a more complete recovery than would have occurred without the use of x-ray. His final deductions and those of other Frenchmen, Laquerriere and Duhamel, are that they shall continue to employ the x-ray because it is not harmful, and its action is not illogical. I hope we shall see some further reports as to what has been accomplished in the cases reported by Dr. Galland.

I enjoyed the paper very much indeed. I have heard many papers on the subject, but never one that in so short a time covered so many phases as Dr. Neal has done.

DR. NEAL (closing the discussion): There are two points I should like to make; one is what Dr. Sobel said in regard to lumbar puncture in poliomyelitis. It has long been my impression that in addition to the very considerable value it has in permitting the examination of the spinal fluid for differential diagnosis, there is a large percentage of cases in which it does have some therapeutic value also, and for that reason is definitely indicated in the early stage of the disease. Whether the therapeutic value is entirely limited to the subjective side of the picture, I am not sure. That it does have some symptomatic value I am sure. In so many instances I have seen children tossing about in bed, extremely restless and uncomfortable. After spinal puncture was done, almost before one could boil the needle and leave the house the child would be sleeping peacefully. I remember one little girl with a mild bulbar poliomyelitis who was vomiting through the nose. I did a lumbar puncture, and the vomiting stopped; a few days later when it returned, she requested the family to have me come again and stop the vomiting. In many instances I have seen a great deal of subjective improvement. It has been more or less a clinical hunch of mine, on which I do not like to place too much emphasis, that possibly the removal of the increased spinal fluid may have some real value in relieving the edema of the tissues of the spinal cord and the brain, and may have some real definite effect on the progress of the paralysis.

I think perhaps I shall speak a little more freely than I did on the subject of serum treatment. I tried to be circumspect in what I said before. It has always been my impression that the value of serum treatment has not been proved by any manner of means. I recall the work done by Dr. Schwartz, mentioned by Dr. Sobel, and I recall many cases which we have seen in the early stages that never went on to paralysis, although no serum was given, so that I have always questioned the value of serum. I have always opposed the use of serum intraspinally on account of the consequent meningeal irritation that so often follows, and that is even more true of the horse serum, which in the early stages of this epidemic was used intraspinally, sometimes with disastrous results. The entire figures for this epidemic have not as yet been collected and correlated. Some of them have been presented to me, and I have had more or less casual conversations with the doctors in some of the hospitals where the serum has been tried out and where control cases have been run, and so far as the figures have come to light, at the present time (and I am speaking entirely on my own authority) there has been nothing to indicate that convalescent serum or the immune horse serum has been of definite value, used after the symptoms have started, that is, used as a therapeutic measure. The compilation of these results will be brought out at a subsequent time, and these points I am making entirely on my own authority. This is not to be taken as a report from the hospitals or Health Department.

#### Menstrual Disturbances in Girls

Menstrual disorders in adolescent girls are most commonly due to focal infection, insufficient protein in the diet, and insufficiency of the anterior pituitary hormone. Where this last-named lack is demonstrable, the oral administration of anterior pituitary substance, in sufficient dosage, is helpful.—Dr. Chas. H. Lawrence, Jr., in *J. A. M. A.*, Oct. 18, 1930.

#### Breast Pain

Many breast pains are due to a prolapse of the breast and can be relieved by a support which holds the breast in position.

# Studies in Diabetes

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## I—The Overproduction Theory of Diabetes

THE appearance of the overproduction theory of diabetes in the literature leads the opponents of this theory to investigate the data upon which its premises are founded. It is said that some mysterious influence, at present unknown, causes the fat of the body to change to glucose through a process of gluconeogenesis in quantities sufficient to supply the metabolic needs, so that the carbohydrates from the food become superfluous and pass through the economy unoxidized, and appear in the urine as glucose.

A second premise claims that the ability to oxidize this new sugar from fat still remains practically unimpaired in the diabetic organism.

Let us see what ideas these premises suggest to us at first sight. If the calories necessary for the metabolism are being entirely supplied by the fat of the body then it is evident that this must be continually replenished from fat in the food, with sufficient protein to maintain nitrogen equilibrium. Such a diet of high fat and low protein and carbohydrate has been used for years by Newburgh with good results. And by this diet the patient is kept sugar free and the blood sugar normal, in a generally satisfactory condition. It would seem from this as if the theory had proved itself practically, and that as long as the patient could be furnished with plenty of fat to turn to glucose, and a little protein, that he could keep on indefinitely; but of course no cure could be expected, as the unknown cause would still persist and there would be a good probability of the early development of arteriosclerosis. This would be our impression after considering the first premise.

On the other hand the superficial consideration of the second premise simply stuns us, because for years we have thought that the R. Q.'s of ordinary cases of diabetes were far below normal, and that such quotients were positive evidence of the decreased oxidation of glucose. But as these impressions are only from superficial consideration it will be necessary to go more deeply into the subject.

Both premises are necessary for the theory as a whole. As a cause of diabetes the theory claims that the hyperglycaemia and glycosuria of the disease are produced by the pathological gluconeogenesis of fat to glucose. If these claims are granted it may be fitted into the present insular theory by saying that the continuous high blood sugar strains the islet cells of the pancreas and causes their degeneration, which has been our belief for the last ten years. This insular theory, however, is no longer tenable, since the pathologists find that there are not sufficient evidences of degeneration, especially in children and acute coma cases, to justify its claims. So that this new theory will not fit in with our present insular theory but must stand on its own legs.

For the first premise, the gluconeogenesis of fat to glucose, there is no real foundation. Its most enthusiastic advocates only claim it as a theory, and presage all arguments based upon it by the phrase

"if gluconeogenesis, etc., " which is hardly a scientific or logical way of reasoning from a doubtful premise. In controversy to this premise Lusk, Knoop and many bio-chemists believe that such a change is entirely impossible in the human economy. One claim made as a foundation for this premise by Soskin is that the conversion of fat into carbohydrate in plants is not disputed (Leathem and Raper, 1925). Macelod (Fuel of Life, p. 3) says "When oil-rich seeds—such as linseed—are allowed to germinate, the fat decreases and the carbohydrates increase as the following figures from Ivanoff will serve to show." It will be noticed that the fats might have decreased independently by oxidation and the carbohydrates increased independently by photosynthesis during germination, without fat turning to glucose. This increase and decrease of fat in proportion to carbohydrate is quite common in the plant kingdom. In fact it is the usual thing for perennial plants to convert their carbohydrate into fat as cold weather approaches as a reserve food supply, capable of producing 9 calories of heat and energy per gram, for sustaining life during the winter, and for supplying the necessary energy for making a start in the spring. All nature (plant) makes this start in the spring, and the calories for it are obtained by the direct oxidation of fat, thus reducing its amount: while at the same time new sugar is produced through photosynthesis for the continuous need of the organism, as food, thus increasing the carbohydrates. Fats decrease, carbohydrates increase, but there has been no proof that fats change back to carbohydrates. Fats and glycogen are the two food forms stored as reserves. Fats release their energy through direct oxidation, according to our general belief, without re-conversion to carbohydrates. Glycogen on the other hand is reconverted to glucose before oxidation. It is my belief that a sufficiency of insulin (or insulins) is necessary for the oxidation of either substance, lacking which glycosuria and acidosis appear in the diabetic individual.

Consequently, claims of this kind cannot be considered as scientific proof and cannot be used as a premise for further conclusions.

The second premise, that oxidation of glucose takes place in depancreatized dogs, is proved by Soskin's tables of the metabolism of such dogs (*Jour. of Nutrition*, Sept. 1930). While acknowledging that these tables do prove that considerable glucose is oxidized by these dogs, it does not prove that this sugar comes from fat, because in all of these tables it may be shown that much more potential sugar is ingested than is excreted in any given period, as seven days. Furthermore, it may be easily shown that the excess sugar, retained from the food, supplies 2/3 of the total calories required by the dog, so that only a little fat is needed to make up the necessary calories. For instance, taking Dog No. 6, Table IV, if this dog, weighing a little less than 6 Kg., is allowed 40 calories per Kg., his daily need will be 240

calories; by estimating the daily glucose ingested for the first 7 days of the experiment, it will be found that he retained and utilized an average of 40 gm. C. H. per day. This would furnish 160 calories from glucose, and only 9 gm. of fat or 81 calories would be necessary to make up the balance. This shows that there is no need of gluconeogenesis from fat, because, since the dogs, before pancreatectomy, were not diabetic, the extra-pancreatic insulin is still produced in the dog after the pancreas is removed, and it is this insulin which makes the oxidation, of both glucose and fats, possible. No oxidation of either can take place except by the aid of insulin, and if insulin is still present in the depancreatized dogs, the fats and some glucose (not so much as when both insulins are acting) will oxidize; and as I have shown in case of Dog No. 6, there is no need of gluconeogenesis from fat and it consequently does not take place.

Again this second premise is terribly weak, even if we grant the first. If we suppose that fat turns to glucose and at the same time suppose that the only insulin comes from the pancreas (according to the insular theory), then, what insulin causes the oxidation of glucose in depancreatized dogs after the pancreas has been removed? The only conceivable answer is cellular insulin. Invertebrate animals have no pancreas, and yet glucose is oxidized and glycogen formed in them by means of this insulin which is produced by the individual cells; while only recently Blotner and Murphy have extracted amounts of insulin from livers of dead cattle, exsanguinated, far greater than can be accounted for by what pancreatic insulin might remain in them after death. Cellular insulin therefore still functions in these dogs.

With these weak premises the theory of overproduction is offered to explain the hyperglycaemia and glycosuria of human diabetes. It is said that, in real diabetes, the gluconeogenesis of fat to glucose produces as much glucose as the insulin from the pancreas can take care of and that all extra glucose from the food passes through the body unoxidized and appears as glycosuria. But what causes nature to do this unnatural act? A certain group of investigators have given continuous doses of epinephrine to dogs and have claimed more glucose in the urine than could be accounted for from the usual sources. But since those experiments Cori and Cori have demonstrated that muscle glycogen, which was not reckoned, is set free to glucose by such epinephrine injections. Also large supplies of glycogen have been found in the skin, which constitutes 16 per cent of the body weight, and in the brain; and Warren finds glycogen granules in the cells of practically all of the tissues, while Macleod himself states that glycogen may be found in every animal cell. None of these were taken into account in the experiments.

So that it is evident that a miscalculation of the amount of glucose set free from glycogen depots under the influence of epinephrine injections has been made, and this accounts for the extra sugar obtained in the experiments which are the basis of the claims that this sugar *must* come from excessive gluconeogenesis of fat. But what kind of a condition in the body would bring about this continuous overproduction of epinephrine to correspond with the experiments? Is it claimed that all cases of diabetes are produced in this way? It is conceivable of course that in one case in ten thousand a brain tumor situated in the pineal region might cause a continuous discharge of epinephrine by direct stimulation of the gland but this wouldn't explain the other cases.

It will soon become an acknowledged fact that there are both pancreatic and extrapancreatic (or cellular) sources of insulin; and it will be likewise realized by investigators that depancreatized dogs and human diabetics are not in the same condition, since pancreatectomized dogs still retain their extrapancreatic (or cellular) insulin-producing organs in a normal state. In the opinion of the writer it is this cellular insulin which is deficient instead of the pancreatic in human diabetes in the great majority of cases.

Opposition to the theory of overproduction of glucose from fat by gluconeogenesis is also offered from the fundamental axiom that the oxidization of both fats and carbohydrates is dependent upon the existence of a sufficiency of some kind of insulin, in the lack of which neither substance oxidizes perfectly and the diabetic state results. If either or both substances oxidize in dogs after the pancreas has been removed then it proves that there is another insulin in the body and this I have named *cellular* insulin. It alone is not sufficient to keep a dog from being diabetic, but in conjunction with pancreatic insulin it makes normal carbohydrate and fat metabolism possible in vertebrates. Since Soskin's tables give additional proof that both fats and carbohydrates do oxidize, though imperfectly, in depancreatized dogs, the old theory that diabetes is due to a deficiency of insulin (or insulins), instead of gluconeogenesis from fat, still seems the best explanation of the diabetic state.

## II—Action of Insulin on Fat

**I**N every individual there are two constants of metabolism: 1. The replacement requirement of the cell protoplasm to maintain nitrogen equilibrium. 2. The total insulin supply of the body. A diet containing as little as 10 gm. of protein may satisfy the first requirement, but there is no standard of insulin supply since each individual has his own. Every diet therefore must contain sufficient protein for replacement, but its supplementary calories for the production of heat and energy may be derived from either carbohydrates or fats; and they are only limited by the insulin capacity of the individual since neither carbohydrate or fat can be oxidized without insulin. If these requirements are fulfilled the individual remains normal, but if they are exceeded he becomes diabetic or obese. Newburgh meets the requirements by a diet of P 15 gm., CH 25 gms., and F 200-300 gms., the latter being limited only by the amount of insulin available, and glycosuria or acetone bodies will appear if this insulin limit is exceeded. Sansum otherwise fulfills the requirements by giving more than enough protein, a little fat and much carbohydrate, limited only by the patient's insulin supply or tolerance. Joslin meets the requirements by using about 1 gm. P. per kilogram with moderate amounts of both carbohydrates and fats. All methods produce a sugar-free urine, and a normal blood sugar, but, if any of these diets are pushed beyond the limits of insulin production the diabetic state ensues. The success of all of these methods in keeping the urine and blood sugar normal shows logically that as long as the insulin capacity of the organism is not exceeded and the nitrogen equilibrium is maintained that the diabetic state cannot supervene; but it also shows plainly that insulin is necessary for the oxidation of either fats or carbohydrates.

This new idea of the necessity of insulin for the

oxidation of fat I have never seen mentioned in the literature of diabetes and it occurs to me that if this idea is true there must be some kind of insulin functioning when the R. Q. is at the level of fat oxidation (0.70) in the depancreatized dog. It seems that fat cannot burn without insulin any more than can carbohydrate, and if it does burn then insulin must be present. As all pancreatic insulin has been removed from the dog (by modern methods) we are driven to the conclusion that there must be other insulin in the body, especially as dogs now live upwards of four weeks instead of from 4 to 12 days as formerly. Also it will be noticed in the following experiments of Soskin and Campbell that in the late period the R. Q. frequently rose to 0.90, showing that sugar as well as fat was oxidizing and of course this couldn't happen without insulin. Also notice that after the fifth day the acidosis begins to decline. These things suggest not only that there is a cellular or tissue insulin present, but that the high sugar content of the blood after removal of the pancreas is stimulating it to increased amounts and effectiveness in an effort to make the cellular insulin perform the work which two insulins do normally. The pancreas then is not the sole source of insulin and there must be a cellular insulin as well, and this insulin can oxidize fats as well as glucose.

Experiments of Soskin and Campbell of Toronto on totally depancreatized dogs, reported to the Thirteenth International Physiological Conference.

The experiments were performed more perfectly and successfully than any previous ones, and were as follows. The dogs were allowed to recover from depancreatization with the assistance of insulin and raw pancreas until they were entirely normal. Then insulin and raw pancreas were withdrawn for several days before any tests were made and then protein food only was given them. "The animals steadily lost weight but remained bright and active during most of the period which with many of them was four weeks". For one or two weeks (different in different animals) after cessation of insulin administration the animals exhibit a respiratory quotient of 0.70 or less. The D:N ratio which starts off at high levels (3.0, 4.0, 5.0) has frequently fallen below 2.0 by the end of the first week. The ketosis which reaches its height about the fourth or fifth day then steadily declines. During the remaining one to three weeks of the experiment the R. Q. steadily rises to values as high as 0.90. The D:N ratio falls frequently to levels less than 1.0. Now please note particularly that if during the latter two weeks of the experiment fifty grams of glucose be added from time to time to the regular protein diet a progressively increased amount of administered glucose will be retained, often as much as 60%, which is accompanied by corresponding effects on the R.Q. with a definite lowering of urinary nitrogen and ketone excretion.

The rise of the R.Q. and the fall of the D:N ratio absolutely demonstrate the activity of a non-pancreatic insulin in the animal; and the increased retention of glucose shows clearly the effort being made, under difficulties, to increase this supply of cellular insulin.

From the preceding facts it seems perfectly logical to state that a part of the total insulin is necessary for the oxidation of fats and another part for the oxidation of carbohydrates; and in the case of depancreatized dogs, that a cellular insulin still persists

in the body in sufficient quantity to oxidize enough of both to provide the calories for basal metabolism necessary to keep the dog alive for four weeks. It has also been shown in studies upon the metabolism of muscles, by Hill and others, that fat may be burned in place of glucose, when there is a lack of it to produce muscular action.

Fats then are of equal importance with glucose in the diabetic state, and it cannot be said that "complete diabetes" exists while fats still continue to burn although glucose is no longer oxidized. Coma, in which neither fats or glucose burn, seems to represent the only true condition of complete diabetes.

On the other hand this conception of the action of insulin on fat relieves us of the necessity of believing that fat *must* turn to glucose, because, if cellular insulin, present in the body after depancreatization, can produce calories enough to provide for the action of the heart, respiratory and other muscles through burning fat, and furnish heat and energy to the dogs for a period of four weeks, there is no need of assuming that these calories come from the conversion of fat to glucose. Now if we apply this new conception of the action of insulin on fat to the diets of Newburgh, Sansum and Joslin, remembering that the tolerance or amount of insulin production remains constant over long periods of time, it will be possible to explain how each one of them succeeds in maintaining the patient sugar-free with normal blood sugar and in nitrogen equilibrium.

In Newburgh's diet so little insulin is required for the very small amounts of carbohydrate and protein that a large surplus is left to oxidize the fats which need only be limited by the insulin supply. In Sansum's diet the reverse is the case and since the fats and protein only use up a small amount of insulin there is much left for the large amount of carbohydrate used. By adding to the endogenous insulin large amounts of injected insulin, even in mild cases, Sansum is enabled to increase all three foods. In Joslin's diet the happy medium between these two extremes is attained, but the same principles of the action of insulin on both fats and carbohydrate obtain in all of them.

It accordingly appears that the action of insulin upon fat is fully as important as its action on glucose, just as acidosis is fully as important, and indeed more so, than glycosuria in diabetes.

#### Occupational Poisons

The New York State Department of Labor has recently given out a statement concerning occupational poisons from which workers of the State have suffered and for which they claimed compensation during 1930.

The statement reveals that lead, benzol, chromium and carbon monoxide are still the predominant hazards in New York industries, while cases of poison from fur dyeing and chrome plating are on the increase. During the year, 770 cases of occupational poison were reported. Of these, 350 were due to lead, 36 to benzol, 29 to chromium, 21 to carbon monoxide and 334 from all other industrial poisons.

One of the old hazards, the report states, well known and understood, is lead. Carbon monoxide is a widespread occupational danger, often unrecognized because it has no smell or color. It is a sure poison and many a worker is affected by it but does not know the cause. He sees no gas, he smells no gas, yet he gets a headache and that is the first symptom. Aniline is another poison, often used in dyeing fur.

Industry is so complex, the report states, that few workers, or even employers can recognize the numerous poisons with which they work daily in order to turn out even the simplest piece of goods. Added to this is the fact that when a worker is sick he usually is unaware of the fact that the industry in which he is engaged may be responsible and he goes to a physician, who may also be ignorant of occupational hazards.  
—N. Y. Med. Week.

# Special Article

## *The Genesis of Social Insurance*

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Chicago, Illinois

SOCIAL INSURANCE is the hybrid offspring of impracticable sentimentalism and political expediency. It is an epidemic disease first observed in Germany about fifty years ago which has gradually spread and infected a considerable number of the nations of the earth and now has arrived at our very doors. Unless we succeed in establishing a rigorous quarantine of enlightened public opinion, it will surely gain a foothold in this country in the not distant future.

Social Insurance consists of the following subdivisions or parts: Compulsory health insurance, old age pensions, widows' and orphans' pensions, and unemployment pensions or doles. In none of the countries were they all adopted at the same time. Germany adopted compulsory health insurance in 1883, and all of the other forms since that time. Austria adopted compulsory health insurance in 1888; Hungary, in 1891. England adopted old age pensions first and compulsory health insurance in 1911, and the others subsequently. In this country some of the states have adopted old age pensions and some widows' and orphans' pensions, but so far none have adopted compulsory health insurance, for which negative blessing let us raise our voices in thanksgiving.

When the scientific physician is confronted with the problems presented by a new patient, he meets the situation in the following manner: he obtains a complete family and personal history in order to ascertain if possible the causes which have brought about the condition; by his physical examination and laboratory investigations he finds out what variations from the normal have taken place; after all this he is in a position to advise and institute the proper treatment. Let us follow the same course in the study of this problem.

During the late seventies a number of German parlor socialists conceived the idea that the state make itself responsible for the medical care of its workers. The sentiment in favor of compulsory health insurance grew rapidly among the workers, and Bismarck, although expressing serious doubts as to the soundness of such a measure, yet feeling that something had to be done in order to appease the clamor of the proletariat and the alarming growth of socialism, adopted social insurance as a government measure, and had a bill drafted and enacted into law.

In England, National Insurance, as it is called there, had a slightly different setting but substantially the same background. In 1910, David Lloyd George in order to strengthen himself politically decided the time for such legislation was opportune. Not being able to speak German, he gathered about himself several interpreters, hid himself to Germany and after interviewing the well paid heads of the German system, and after having been wined and dined and lionized for two weeks or so, he returned to England very enthusiastic about the whole project, had a law drafted, and later secured its passage. In the recent parliamentary election the Liberal party,

of which Lloyd George has been the head for many years, elected just four members to Parliament or less than one percent of the whole number. So while Lloyd George may have saved his political skin by National Insurance in 1911, he certainly lost his hide by it in 1931.

Practically every reform movement attracts to itself a considerable number of well meaning, emotionally impressionable, impractical, irresponsible, very vociferous individuals, and very often a group, usually the very ones who manage the propaganda and who hope to gain some pecuniary benefit from it. Social Insurance is no exception to this general rule.

Some of the common characteristics of reformers is that they want a new law passed for every human ill, and when the law is enacted, they either sit back waiting for the millenium to arrive or they rush off looking for new evils to correct by new laws, forgetting to see to it that the law just passed is being properly enforced, and forgetting at all times that all laws must depend for their enforcement not upon supermen but upon men often of less than average intelligence and integrity, upon politicians and their henchmen, who are quick to see how these usually unsound and loosely drawn laws can be converted to their own advantage.

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### Another State Cancer Program

The New Hampshire General Assembly recently passed a law and appropriated funds for the development of an official cancer program in that state. A sum of \$40,000 was made available for use during the next two years in the establishment, organization and maintenance of cancer clinics throughout the state. The law creates a State Cancer Commission, made up of the Governor and four others, one of whom must be a member of the State Board of Health and one, another member of the state medical society.

Massachusetts started an extensive official cancer program in 1926. Activities there embrace the maintenance of state hospital facilities for cancer patients and the operation of diagnostic clinics throughout the state.

In California the state medical society has created a non-official State Cancer Commission to represent the organized medical profession in all phases of the organized fight against the increasing menace of cancer. The first objective of the commission is to review and bring widely to the attention of the profession in California the most modern methods of diagnosing and treating cancer, especially early cancer. Later the work will be directed toward the education of the public in signs and symptoms which suggest early cancer and to the encouragement of the establishment of specially equipped hospitals and clinics.

A summary of the 1930 cancer record by Frederick L. Hoffman, writing in the *Spectator*, explains the growing interest in this problem. The summary shows that mortality from cancer reached its highest recorded peak in 1930 in fifty leading American cities. In these cities the rate went up from 71.6 per 100,000 population in 1906 to 122.3 in 1930. Each year during that period except 1925, showed a rate higher than the year which went before.

One important reason for the increased prevalence of cancer is that a larger percentage of people in this country are reaching the cancer age than formerly. More accurate diagnosis may account for some of the apparent increase. Whatever the explanation the disease is now such a prominent cause of mortality that all reasonable efforts at control are amply justified.—*Illinois Health Messenger*.

# Contemporary Progress

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## Nose and Throat

### Production of Voice and Speech Following Total Laryngectomy

W. W. Morrison (*Archives of Otolaryngology*, 14:413, October, 1931) notes that there is a growing conviction that total laryngectomy is the operation most likely to result in cure in cancer of the larynx, and an increasing number of patients are being subjected to this operation. But unless these patients can be trained to produce a pseudovoice, they are seriously handicapped; the same is true of persons with complete chronic airtight stenosis of the larynx from any cause. There are several types of mechanism for the production of pseudovoice. One is the true buccal or pseudowhispered voice; it can be easily learned, but is very faulty and imperfect. The pharyngeal pseudovoice is produced with the aid of a pseudoglottis formed at the back of the mouth or in the hypopharynx; it is usually fairly satisfactory. One of the best forms of pseudovoice is the esophageal type in which the vicarious glottis lies at the esophageal mouth of Killian and the vicarious air chamber is formed within the lumen of the upper part of the esophagus. In some cases the cardiac end of the stomach is the vicarious air chamber, the pseudoglottis being at one of the sites mentioned. In any event the laryngectomized patient must be carefully trained in the use of the pseudovoice. As soon as the laryngectomy wound is healed, training and practice is begun. The author adjusts the method used to the patient. He encourages and aids the patient first to produce some sound that seems easy for him, and then develops the therapy on this basis. The patient must first learn to dissociate the processes of respiration and of swallowing from the expulsion of air for the production of pseudovoice. The first exercises are designed to fulfill this purpose. He must next practice forming the explosive consonants, p, t and k and vowel sounds with these consonants. Practice in the production of words of one and more syllables comes next; and exercises to produce variations in tone. The methods must be adapted to each individual patient, the "leads" obtained during the course of therapy being followed. Good results may be obtained in three or four weeks in some cases, while in other cases several months are necessary before patients can be sent home to develop voice and speech by further practice and use.

### Radiological Demonstration of Sinusitis

H. K. Graham Hodgson (*Journal of Laryngology and Otology*, 46:729, November, 1931) states that for radiographing the accessory nasal sinuses, the positions used must be absolutely standard, and the normal degree of transradiancy which each sinus should show must be known to the radiologist. He uses the following six standard positions, all radiograms being made with the patient in the erect position: The occipito-frontal view with the tube centered half an

inch below the external occipital protuberance; the occipito-mental view, with the orbito-meatal line at an angle of 45 deg. to the film; the vertico-mental view, with the central ray vertical to the patient's vertex; the right oblique view, with the orbito-meatal line at an angle of 35 deg. and the tube centered over the left mastoid process; the left oblique view, corresponding to the right oblique; the lateral view. If the sinus is opaque, it is important to determine whether there is pus or merely a thickened membrane; this can be shown in the radiogram only with the head in the erect position to establish the presence or absence of a fluid level; if the head is tilted to right or left the opacity maintains its horizontal upper margin if fluid is present. In 6 per cent. of cases in which fluid was correctly diagnosed radiologically in one of the sinuses, there was no clinical evidence of pathological changes; in these cases only a small amount of fluid was present, usually in the antrum.

### Treatment for Atrophic Rhinitis

J. S. Stovin (*Archives of Otolaryngology*, 14:617, November, 1931) notes that in simple atrophic rhinitis the most important pathological changes are loss of the cilia and thinning of the mucous membrane of the nose. If the cilia are once destroyed they cannot be replaced, hence it is important to stimulate the intranasal mucous membrane and restore it to a healthy condition as soon as possible. In the treatment of atrophic rhinitis, it is important to look after the patient's general health; to eradicate any local contributory factor such as sinusitis; and to maintain a proper amount of moisture in the air. For local treatment, the author has found that the galvanic current gives the best results. His method is as follows: The nose is first cleansed by the "wet suction" method using warm physiological saline solution, until all mucus, dried scales and crusts are removed. Then each nostril is packed with absorbent cotton moistened with physiological saline; care is taken to line the mucosa completely, and the strips are long enough to extend out of the nose for at least half an inch. The galvanic current is used with either the positive or the negative pole as the active electrode; the author makes it a practice to alternate the two, making the positive pole the active electrode for one treatment and the negative pole the active electrode for the succeeding treatment. The active pole is attached to the cotton protruding from the nose and the current turned on and increased slowly until the patient notices a salty taste in the mouth; it is then applied for fifteen minutes, and gradually turned off. The packs are removed and an oil applied, such as balsam of peru in castor oil. Treatments are given three times a week; and improvement is noted within a few weeks. The author

has found this to be the method of choice in simple atrophic rhinitis. He has also used it in ozena, but with less satisfactory results.

#### Ozena and the Maxillary Sinus

N. I. Metzianu and V. Tempea (*Oto-rhino-laryngologie internationale*, 15:448, September, 1931) report a study of the maxillary sinus in 19 cases of ozena. In 16 of these both transillumination and radiological examination showed the sinus to be entirely normal; in 3 of these cases puncture of the sinus was also negative. In 3 of the 19 cases, however, symptoms indicated maxillary sinus involvement, and transillumination and radiograms both showed a definite opacity; and on puncture pus was obtained which showed the same micro-organisms as were found in the antrum of Highmore in each case. In each of these cases a dental focus of infection as the source of the maxillary sinus infection could be excluded. In the author's opinion these findings do not indicate that maxillary sinusitis is an etiological factor in ozena, as the sinus infection was found in only 15 per cent. of the cases. Their findings indicate, on the other hand, that the maxillary sinusitis in these cases was of nasal origin, and that the infection of the nasal cavity and the atrophic changes in the sinus walls characteristic of ozena were etiological factors in the production of the sinusitis.

#### Nupercain in Nose and Throat Practice

A. F. Laszlo (*Laryngoscope*, 41:718, October, 1931) reports the use of the new local anesthetic (nupercain or percain) in nose and throat work at the Nose and Throat Department of the New York Post-Graduate Hospital and Medical School. Nupercain differs from other local anesthetics; it is a chinolin derivative, in the form of colorless crystals. It is very sensitive to alkalies, must be kept in alkali-free glass, and the saline solution used for dissolving it must be free from any alkali. The author has used nupercain in a 1 : 1,000 solution for infiltration anesthesia for tonsillectomy; he has found that it gives a satisfactory anesthesia, but it has not been definitely more lasting than novocain anesthesia, nor was bleeding reduced. No reactions were observed in more than 125 operations, except that one patient complained of a severe headache. Nupercain has also been used for topical application for operations on the mucous membrane of the nose, pharynx or larynx. He has found it excellent for topical application as a preliminary to tonsillectomy, for which purpose cocaine can be completely eliminated. It is also satisfactory for operations on the nose, where shrinking is not necessary or where it is contra-indicated. For diagnostic purposes in the nose, it cannot be used as a substitute for cocaine, because it has a hyperemic rather than an ischemic effect.

## Otology

#### An Aural Protector Against Noise and Water

A. C. Jacobson (*Laryngoscope*, 41:857, December, 1931) describes a simple device for the protection of the ears against loud noises and water. It consists of two molded hemispheres of sponge rubber on a light metal spring that is easily bent with the fingers so as to fit the head. The ear pieces are resilient and apply pressure gently, closing the tragus; they do not enter the auditory canal. This device totally excludes water from the ears in bathing, swimming or diving. It cannot be displaced by diving, nor by the

movements of the temporomandibular articulation produced by the opening and closing of the mouth in swimming. It markedly reduces the intensity of noises and can be used under any circumstances where persons are constantly exposed to loud noises as in aviation and industry, or where it is desirable to reduce the intensity of common noises that prevent sleep, annoy sensitive patients, or interfere with pre-operative preparation and post-operative care of surgical cases. It also gives relief in some cases of tinnitus.

#### The Hard-of-Hearing Child

M. A. Goldstein (*Laryngoscope*, 41:733, November, 1931) notes that with the invention of the audiometer it has been made possible to test the hearing of groups of school children easily and quickly and to discover any degree of deafness that would prove a handicap to the child. With the 4-A Phonograph Audiometer telephone receivers are distributed in classes and adjusted to test one ear. The phonograph is used to call the test numbers, the loudness of each sound being less than that of the preceding one; the test is given twice by a woman's voice and twice by a man's voice; the children are directed to write down the numbers that they hear. The test is then repeated for the other ear. In the upper grades, three digit numbers are used; in the lower grades one or two digit numbers. This group method of testing cannot be used for grades below the second half of the second grade. This test is made in groups of about 40 children in a quiet class room. The records are then studied and the borderline cases are tested individually with the 2-A audiometer and an audiogram made. These cases are about 18 per cent. of the total. A careful otological examination and diagnosis is made by an otologist in children showing any degree of deafness. Teachers are notified of the results of the tests; and parents or guardians are also notified if any deafness is found and treatment advised. Records are kept on file and the progress of deaf children followed.

#### Syphilis of the Middle Ear

R. Mayoux (*Revue de laryngologie, d'otologie et de rhinologie*, 52:545, Oct. 31, 1931) finds that syphilis of the middle ear is not as rare as has been supposed. In children with congenital syphilis, he has seen several cases in which an otitis media developed at about the same time as interstitial keratitis and other symptoms of syphilis. This otitis differs from the usual type of otitis in children. There is no naso-pharyngeal infection, no severe pain and no fever; often the only symptom is the discharge from the ear. If there is pain it is dull; deeply situated, more marked at night, and precedes the appearance of the discharge by several days or weeks. Often fungoid growths or polyps develop. The otitis is chronic and in healing leaves fibrous cicatricial tissue with retraction of the tympanum. In cases of congenital syphilis where there is no discharge, inspection of the ears not infrequently shows thickening and retraction of the tympanum. Deafness is not usually marked in these cases unless the bony capsule of the labyrinth is also invaded by the syphilitic process, producing the characteristic syphilitic deafness of congenital syphilis. Syphilitic otitis media may also develop in adults with acquired syphilis; in these cases the ear condition is resistant to the usual treatment for otitis media but responds to specific treatment. The author is of the opinion also, that some cases of middle ear

sclerosis in adults may be due to syphilis, but he admits there are few cases in which this can be proven, as cases of long standing of this type are resistant to specific treatment.

#### An Illuminated Otoscope for Irrigating

A. P. Bloxson (*Archives of Otolaryngology*, 14:615, November, 1931) presents an otoscope designed by himself for irrigating and draining secretions from the external auditory canal under illumination. The fluid used for irrigating is delivered by gravity through an intake tube and given a circular motion by passing through spiral grooves on the inner surface of the speculum. Washings are removed through a drainage tube by suction, the force of suction being regulated by a valve. In cases in which this instrument has been used, results have been "gratifying." The ears have drained freely under treatment, have become dry in a short time, and have not had to be repeatedly reopened. The warmth and gentle circular motion of the irrigating fluid have relieved pain. This instrument provides for gentle but thorough removal of pus from the walls of the external auditory canal, without pressure on the tympanic membrane or on an opening in the tympanic membrane, so that no material is forced back into the middle ear.

#### Indications for Operation in Acute Mastoiditis

G. Coulet (*Revue de laryngologie, d'otologie et de rhinologie*, 52:616, Dec. 15, 1931) reports 100 cases of acute mastoiditis operated by himself. In this series the mortality was 13 per cent. in cases operated in the fourth week, but none of those operated in the first week died, and only 5 per cent. of those operated in the second week. The incidence of complications—sinus thrombosis, facial paralysis, meningeal reaction and meningitis, and subdural abscess—was much higher in the third and fourth weeks than in the first two weeks. The author is of the opinion that operation should be done in cases of otitis media, as soon as symptoms indicating the probability of mastoid involvement appear, without waiting for the classical syndrome of mastoiditis to develop. Among these symptoms are pain which persists after paracentesis especially if throbbing and deeply located; any signs of trigeminal neuralgia or beginning facial paralysis; persistent fever, continuous or intermittent; any change in the character of the discharge, especially if it becomes more abundant and frankly purulent. When such symptoms develop operation is indicated, whether it is in the first or the second week of the otitis; to delay is to invite the development of dangerous complications, while the operation *per se* is not a dangerous one in early and uncomplicated cases.

## Obstetrics

#### Toxemias of Pregnancy

W. J. Dieckmann (*American Journal of Obstetrics and Gynecology*, 22:351, September, 1931) notes that in his experience concentration of the blood is the most consistent finding in eclampsia and pre-eclamptic toxemia; relief of this condition usually results in improvement in the clinical symptoms. The most important part of the author's treatment of eclampsia and pre-eclamptic toxemia at the St. Louis Maternity Hospital, has been the injection of glucose solution intravenously; in many cases following such an injection the dilution of the blood would be satisfactorily maintained and the toxemia re-

lieved. In certain cases, however, the dilution of the blood could not be maintained, even after delivery, and the eclamptic convulsions would recur. The explanation, the author believes, is, that the serum proteins are changed in some way so that they do not hold water. For this reason gum acacia solution was used for intravenous injection in certain cases of eclampsia and severe pre-eclamptic toxemia not responding to other methods of treatment. Due to its colloidal properties this solution remains in the blood and holds water, thus increasing blood volume and decreasing viscosity with resulting improvement of the circulation of the tissues and organs. Practically, this treatment proved very effective in relieving symptoms within a few hours. On the basis of his experience, the author recommends the use of 500 to 1,000 c.c. of a 6 per cent. gum acacia solution in eclampsia and severe pre-eclamptic toxemia.

R. D. Mussey of the Mayo Clinic (*Minnesota Medicine*, 14:889, October, 1931) states that he has observed 97 cases of toxemia in the later months of pregnancy in 2,906 deliveries, an incidence of 3.3 per cent. There were 10 cases with eclampsia, 80 cases with pre-eclamptic toxemia and 7 with nephritis prior to pregnancy. Thirty-five of these 97 patients were observed through at least one subsequent pregnancy; of these 2 had pre-existing chronic nephritis; 14 did not develop toxemia in subsequent pregnancies; but 19 of the 33 patients with toxemia in the first pregnancy without chronic nephritis, developed toxemia in a subsequent pregnancy. Four of these had no evidence of persisting arterial or renal injury; 7 showed suggestive but not conclusive evidence of chronic nephritis; 8 patients, none of whom had shown any evidence of nephritis prior to the first pregnancy, showed definite evidence of chronic nephritis of a more or less severe grade following pregnancy with toxemia. These findings indicate that after a pregnancy in which toxemia has occurred, the incidence of recurrent toxemia is high in subsequent pregnancies. Such recurrent toxemia is probably due to the same factor or factors as the original attack and may effect: 1. Patients who have entirely recovered from the initial attack. 2. Patients who have undetected residual renal or arterial injury subsequent to the first attack. 3. Patients with definite chronic nephritis which existed before or developed subsequent to the initial attack.

#### Comparison of Pregnancy Tests

M. R. White and A. O. Severance (*Journal of the American Medical Association*, 97:1275, Oct. 31, 1931) report a comparison of the Ascheim-Zondek test with the two modifications of this test proposed by Brouha and Friedman, the former using immature male mice and the latter mature female rabbits (non-pregnant) as the test animals. Studies were also made of the pupillary reaction of Bercovitz and the serum reaction of Manoilov in some cases. In 191 Ascheim-Zondek tests there were 20 instances in which the results did not agree with the final diagnosis; there were 5 false positives in 69 non-pregnant controls; and 14 negative reactions in 29 tests on cases of ectopic pregnancy and incomplete abortion; in only one case of normal pregnancy was the reaction negative. The Brouha reaction was positive in all of 60 cases of normal pregnancy, 10 cases of ectopic pregnancy and 9 cases of incomplete abortion; there were 10 false positive reactions in 27 non-pregnant women. The false positive reactions with the Ascheim-Zondek and Brouha tests were evidently due to some endocrine disturbance. The Friedman test gave correct results in all but one of 14 cases of normal pregnancy and in all of 18 non-pregnant patients; in the one case of pregnancy the test was negative on the thirty-second day after the last

menstruation. It was this test that gave 2 negative and 2 positive reactions in 4 cases of ectopic pregnancy and 3 positive reactions in 4 cases of incomplete abortion. From this study, the authors find that the Ascheim-Zondek test was of value as a diagnostic procedure in 51 per cent. of cases of ectopic pregnancy and incomplete abortion, the Friedman test in 62 per cent. of these cases. The Brouha reaction was correct in all, but the time required for the test limits its practical value as a diagnostic aid in these cases. In cases of suspected normal pregnancy the Brouha reaction has definite advantages over the Ascheim-Zondek test; the Friedman test also has certain advantages over the Ascheim-Zondek method. All these tests depend on a quantitative change in the amount of active principle excreted in the urine, which is believed to be anterior pituitary hormone. The serum test of Manoilov and the pupillary reaction of Bercovitz were found to be of little value as diagnostic aids.

#### *Trichomonas Vaginitis in Pregnancy*

P. B. Bland and his associates at the Jefferson Medical College, Philadelphia, Pa., (*Surgery, Gynecology and Obstetrics*, 53:759, December, 1931) report a special study of trichomonas vaginitis in pregnancy. Smears were made routinely before the thirty-sixth week of pregnancy from the vaginal secretion of all patients visiting the ante-natal clinic of the Hospital. Trichomonads were found in 136, or 22.7 per cent., of the 600 women examined, the incidence of the infection being higher in Negro women (30.8 per cent.) than in white women (13.3 per cent.). Only 18, or 13.2 per cent., of the patients showing trichomonads in the vaginal secretion, voluntarily complained of local discomfort; on questioning, however, many others admitted the presence of an annoying discharge. The vaginal secretion was definitely altered in all, being creamy yellow seropurulent, and often "frothy or foamy." Several patients noted pruritus and chafing. In those that showed a frank vaginitis (13 per cent.), the appearance of the vagina resembled that of an acute gonorrhreal vaginitis, except for the foaming character of the discharge. In 250 women who were delivered at the Hospital, 62 (or 24.8 per cent.) had shown trichomonads in the vaginal secretion during pregnancy and had not been treated; of these 27, or nearly 50 per cent., showed puerperal morbidity, while only 19.6 per cent. of those without trichomonas infection showed any morbidity in the puerperium. The authors conclude that trichomonads are definitely pathogenic in the female vagina, and that they may be an etiological factor in puerperal morbidity. A study of the comparative morphology of trichomonads from the mouth, intestine and the vagina indicates that the intestine is not the source of *Trichomonas vaginalis*.

#### *Cervical Cesarean Section*

J. P. Greenhill (*Surgery, Gynecology and Obstetrics*, 53:547, October, 1931) reports that at the Chicago Lying-In Hospital 874 conservative cervical Cesarean sections and 21 additional laparotrachelotomies with amputation of the uterus were done up to July 1, 1929; the total maternal mortality was 1.23 per cent. and the total fetal mortality was 4.6 per cent. Up to July 1, 1930, the author himself had done 108 conservative and 9 radical cervical Cesarean sections, without a maternal death and with 5 fetal deaths, 4.3 per cent. The chief indication for the operation was cephalopelvic disproportion, in 47 per cent.; other indications were previous Cesarean section with test of labor, 6.8 per cent.; previous Cesarean section without test of labor, 12.8 per cent.; toxemia, 7.7 per cent.; placenta praevia, 6 per cent.; abruptio placentae, 4.3 per cent. Only 57.3 per cent. of the patients were in labor when Cesarean section was done. Nearly all pa-

tients with contracted pelvis were given a test of labor. Direct infiltration anesthesia alone was used in 64.1 per cent. of all the cases. A temperature of 100 degrees or above was noted in 58, or 49.6 per cent. of cases; in half of these the cause for the elevation of temperature could not be determined; for those cases in which the etiology was known, the most frequent cause was infected wound in 9.6 per cent. There were 5 fetal deaths in the series, but in 3 cases, the death occurred before operation was done. In most cases the wounds of cervical Cesarean section heal well, as shown by microscopic study of specimens of scar tissue removed at repeated operations.

## Gynecology

#### *The Female Sex Hormones*

R. T. Frank (*Journal of the American Medical Association*, 97:1852, Dec. 9, 1931) reports a study of the female sex hormone in cases of excessive menstrual bleeding (ovarian hyperfunction) and amenorrhea and sterility (ovarian hypofunction). The amount of female sex hormone was determined in both blood and urine by the mouse test. In normal fertile women, one mouse unit can be demonstrated in 40 c.c. of blood from seven days before to the onset of menstruation; there are two periods of maximum excretion of the hormone in the urine, corresponding to the time of ovulation and one to two days before menstruation. Studies of the anterior pituitary hormone in the blood and urine have also been made in some cases, but these studies are not complete. In the cases of excessive bleeding studied, all organic causes were carefully excluded, and also other endocrine diseases. In cases of excessive bleeding at puberty the female sex hormone in the blood was found to be constantly at a high level; in cases of climacteric bleeding, the hormone was also at a high level in the blood, but tended to show some cyclic variation. In menorrhagia and metrorrhagia of mature women, the blood tests for female sex hormone were usually negative throughout the cycle. The author is of the opinion that studies of the anterior pituitary hormone will throw more light on these cases. In cases of amenorrhea, three different types have been found: 1. Those in whom the female sex hormone in the blood shows a definite cyclic variation but never reaches the normal level, the "subthreshold blood cycle." 2. Those in whom the blood does not show any of the female sex hormone (in 40 c.c.) at any time, but there is a continual excess in the urine, "negative blood cycle." 3. Those cases showing no demonstrable sex hormone in either the blood or the urine, "acyclic amenorrheas." Women who menstruate but are sterile usually show a subthreshold blood cycle, or a negative blood cycle. From these studies, Frank concludes that ovarian therapy has been used in many cases where it is entirely unjustified; and where it may be justified theoretically he has never found it practically effective. His investigations with anterior pituitary preparations have also been negative. In some cases of excessive bleeding roentgen-ray therapy has given him good results. In amenorrhea he does not recommend stimulating doses of x-rays as a rule, and insists that this method should never be used except in those cases where blood tests for the female sex hormone show a subthreshold cycle.

E. C. Dodds of the Middlesex Hospital, England, (*American Journal of Obstetrics and Gynecology*, 22:520, October, 1931) notes the wide difference of opinion in regard to the potency of ovarian extracts, including Frank's negative results. He describes his own method of producing a water-soluble estrus-producing hormone

(Continued on page 62)

# Medical Times

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**A High Office Seeks and Finds the Man**

The new President of the Long Island College of Medicine, Dr. Frank L. Babbott, Jr., is well fitted in all respects to carry on the great tradition of this independent school and quietly to forge new purposes integrating medicine with the social needs of the day. We say "quietly," because the ballyhoo spirit so much in evidence in these days has, the gods be thanked, no place in this man's scheme of things constructive.

President Babbott pleads for *Totalism*, as against *Partialism*, in a balanced philosophy of medicine, with a rational *Specialism* in its proper place. The future of the College is auspicious indeed under a man who conforms so completely with Geoffrey Chaucer's characterizations of his pilgrims of high type: "He was a verray parfit gentil knight. . . . He was a verray parfit praticour." Dr. Babbott will lead his students to another and greater Canterbury.

**A Plea For Independence**

Is organized medicine, like the bar and the church, headed for bankruptcy in its leadership?

The low state of the bar is obvious enough. "A cowardly bar makes an arrogant bench." A cowardly church would to-morrow bless the banners of war.

What is the test in the case of medicine? It is simply

the degree to which able and high-minded individualism and independence have been preserved as our rightful heritages—the degree to which we have resisted the evils of mass action while availing ourselves of its advantages.

The spirit of independence bids us watch warily the influences emanating from the foundations, from lay boards of all sorts, from rubber-stamp legislatures, and from the numerous professional doctrinaires, sociological charlatans and propagandists that infest the land. This spirit also bids us to take no chances on possible sovietization at the hands of anybody.

There is undoubtedly a more or less subtle struggle for control in progress, with State medicine in the offing.

All factors making for independence must be sustained and cherished wherever they exist. We have in mind an independent medical press, independent hospital staffs, independent medical schools, independent medical societies, and independent individuals. In these things resides all future hope.

It appears to us that the small units making up our large organizations, so long as they furnish the sinews of war, possess in the latter a potent means of making sure that good results flow from the payments of a large proportion of the small societies' income into the coffers of the large organizations. Where the aggregate collections from the small societies are devoted to the subsidization and fostering of institutions and publications that bring no tangible benefit to the contributors a mere exploitative racket is in operation. The institutions and publications may be all right in themselves, but they should be financed in some other manner.

Especially where the small units are not really able to give largely of their means—and this must be the case at present in many localities—a moratorium on part or all of the annual subsidies should be applied by the small units.

Are our central organizations, unlike the bar and church, strong fortresses against threatening menaces? Are we perfectly sure of this? Should our dire sacrifices be continued in order to support them? What guarantees can they offer? Should they be reorganized?

This is an independent utterance. Make the most of it.

**Early Operation for Appendicitis**

By the time an appendix is badly inflamed the patient is usually quite toxic and after operation is rather ill for several days. If drainage is necessary his hospitalization is prolonged several days or weeks. Therefore an early diagnosis and early removal of the appendix is satisfactory for the patient because he has little suffering and is out of the hospital in eleven days. From the economic standpoint it is very important.

It should be a triumph for a surgeon to get an appendix out at the time when it is very mildly inflamed. This stage can usually be discovered by a leucocyte chart taken every three hours. If the count is increasing and if we can get operation at the point when the leucocytes are about 12,000 (other symptoms coinciding), we are rather likely to find a mild inflammation. Frequently when we find this mild condition the patient is allowed to have operation at the convenience of the hospital and surgeon. Thus if a leucocyte count is at 12,000 and the tenderness over McBurney's point is not intense, perhaps we will wait until morning or not operate on Sunday. I believe that when the leucocyte count is slowly increasing and the temperature has not yet reached 99 deg.

F., that the operation should be performed immediately, whether it is during the night, Sunday or holiday. It is by such early interference that we can give the patient comparative ease following operation and get him back to work in a short time.—M. W. T.

#### J. Riddle Goffe

On Christmas Day we read in the *Times* an admirable sketch of the life of this well-known gynecologist, who passed to his reward on December 24th, full of years and honors. Long the bright mirror of his mind had been dimmed, but his cheerful philosophy sustained him to the end.

Formal tributes will be paid to his memory by the many hospitals and medical societies with which he was connected, but his oldest friend, the one who knew him best of all, wishes to lay a simple wreath upon his grave.

In his prime he was a commanding figure, the original deviser of supravaginal amputation of the fibroid uterus and the author of notable papers on gynecology.

It is the personal touch that counts. He was a fine gentleman with no blot on his untarnished escutcheon. Such a one was John Polak, who left us when in his prime; such are many of our noble ones whose names are on the honor roll.

Farewell, our brother. *Ave et vale.* H. C. C.

#### Mrs. Eddy: Super-Babbitt

In a play recently produced in Berlin ("Die Heilige aus U. S. A."—"The Saint from U. S. A."), Ilse Langner presents Mrs. Mary Baker Glover Eddy in the clear light made possible by the passage of time and the passing of prejudice. In the play she is a shallow, mercenary, hysterical and unpleasant character. She is shown cashing in, but losing faith in her own ideas, suffering from persecutory mania, and dying demented. So appears the "saint" from a distance, in the eyes of an impartial artist. It must be a faithful portrait, since a more attractive and spiritual figure would have heightened the dramatic values of the play.

This shrewdest of charlatans was able to make a mighty appeal to New England. What was its basic secret?

She offered a cult to thrifty people that promised to eliminate entirely the cost of medical care.

To the selfish she showed a way of life that promised to eliminate personal service to the sick.

Here was genius—of a certain sort—of the highest order.

#### Whither?

Many forces are tending to limit population. Postponement of marriage, permanent celibacy, biological diminution of fertility incident to advancing civilization, and our crude contraceptive methods supplemented by abortion will, in time, produce extensive changes in social organization and economics. We have entered upon this course about as irrationally as we enter upon war, with warning notes sounding occasionally from men like Julian Huxley, Dr. Kuczynski, Professor Lancelot Hogben, and Louis I. Dublin. While extinction does not seem to be taken very seriously into account, grave depopulation is considered possible.

Dublin estimates that the population of the United States, assuming the continued operation of the factors in question and of our immigration policies, may fall to 75,000,000 in the course of the next sixty-eight years. He also estimates that persons of fifty years of age and over may then constitute over forty per cent of the entire population.

What will the poor Babbitt of the future do then? What about the successors of General Motors and the frigidaire people? Who will then pay for television? Who will buy those lots in Woodbineville?

Weep bitterly for our "rugged American individualists" and their whole scheme of things.

#### The Conditioned Behaviorism of G. B. S.

Frank Harris, in his recently published book about George Bernard Shaw, has thrown a flood of light upon Shaw's antipathy to medicine and its practitioners. It seems that a certain George John Vandaleur Lee, a teacher of music, was the luminous figure in one of those family triangles that so often strangely influence exposed children who happen to be precocious and specially gifted. Shaw's father was a shiftless drunkard and Lee completely dominated the Dublin household. Mrs. Shaw's fascinated fixation upon the charlatan Lee was determined by her belief in the potentialities of her voice, a faith fed by Lee with the utmost assiduity and craft. Lee exercised a great influence over the boy, who hated his school, hated the English church which he was compelled to attend, and was held aloof from all social contacts because of the snobbery and bigotry of the Shaws, as well as by reason of their poverty and the father's habitual drunkenness. The peculiar personality developed by the boy as a consequence of his strange environment was *completely respected* by Lee, who treated him as an intellectual equal and wisely fed the flames of genius. But Lee had all sorts of freak ideas about health, food, medicine and doctors. Doctors were anathema, and no matter how ill the boy or his mother might be, Lee nursed them and banned the profession. When such a situation is considered along with the fact that Shaw's education proceeded along classical lines to the exclusion of science, it is easy to understand how all his intellectual reflexes, so to speak, were queerly conditioned for life.

Plays like *The Doctor's Dilemma* reflect this conditioned behaviorism, while Shaw's incorrigible opposition to vaccination and his strict personal adherence to vegetarianism give further evidence of Lee's witchcraft in Shaw's childhood.

All the foregoing facts are well authenticated, Shaw himself having read the proofs of the book cited before its publication.

So splendid were the literary and dramatic results of that strange Irish childhood that the man's attitude toward things medical can be discounted. And it is not to be forgotten that the attitude in question is always good-natured. Unlike the humor of Swift, Shaw's badinage looses no vicious scorpions.

Shaw's art is woven out of these kindly perversities and don't forget that he has capitalized it at a high figure. So he keeps out of Ireland, the reason being, as a noted compatriot recently said, that there he would be too easily seen through.

#### Toleration—Of the Wrong Things

Our tolerances and intolerances seem to balance each other pretty well. Perhaps our toleration of city noises, crooked and incompetent politicians and Babbitts, prohibitory laws with vicious consequences, sidewalks universally strewn with the feces of dogs (what about that hoary legend of filthy Constantinople and its dogs?), automobile killings, large-scale involuntary poverty and ill health, lynchings, violations of the Bill of Rights by our many Dogberrys, overcrowding on our municipal transportation systems, and subway atmospheres consisting largely of intestinal gases has to be compensated for by a cer-

tain amount of religious intolerance, race prejudice, and hostility to the concept of internationalism. The cure of the latter may reside largely in the development of intolerance toward those things that we now bear with so sweetly.

#### The Trauma Factor in Cancer of the Cervix

W. Liepmann (*Medizinische Klinik*, June 5, 1931) shows on a statistical basis that the female genitalia are especially susceptible to cancer and includes measures for birth control, by which the epithelium is always disturbed and irritated, among the causative factors. Our statistics bearing upon obstetric trauma are somewhat vitiated by the fact that we have no accurate count on the number of abortions and other intracervical interventions that are employed for the limitation of offspring. The trauma of abortion injures the mucous membrane of the cervix more than does normal confinement, and the pessaries used for the prevention of conception are also harmful.

Studies along these lines will in time reveal more conclusively the relation of contraceptive trauma to cancer of the cervix.

#### Camouflaged Saloons and Hospital Finance

Why should our camouflaged liquor industry be permitted to flourish without compensatory tribute to welfare work of one kind and another?

Were not liquor revenues, before prohibition, a regular part of the excise taxes devoted to charity costs? Does not their loss at the present time help to account for hospital deficits?

Real estate as a basis for the budget is weakening. Would not the general budget be relieved if we tapped the available source in question for welfare work only? Our public officials are supposed to be zealously seeking new sources of income.

The prohibition law, in effect, confers a special privilege upon liquor dealers, exempting them from taxation.

Liquor revenues should form no part of a general budget, since then it would be a civic or patriotic duty to drink heavily, but it would seem that there should be some way to draw them into our welfare funds. Is there any good reason why this billion-dollar business should not help to finance the ills of the communities in which it thrives so mightily, particularly as regards hospital costs?

Our hospitals stand today at the foundation of civilization and must not be permitted to deteriorate. To the medical profession this would be as great a blow as the failure of the colleges would be to educators.

We are reminded of the illegality of the business, and even of its "non-existence." But the former does not prevent the Government from collecting income taxes levied upon the loot of bootlegging crooks, even where bribery has to be taken into account in estimating the loot. As to the latter, could not formal official cognizance be taken of the actuality of the business by legislators and executives acting boldly in the economic interest of the State? Why the hypocritical ostrich policy?

We concede at once that direct taxation is inexpedient. But the camouflaged saloon is a grave menace to health. The health menace is great in proportion to the surreptitiousness of the business. These camouflaged saloons (we did not say speakeasies) are invariably filthy places. Why could they not be proceeded against as such under a special amendment

to the Sanitary Code providing for heavy fines to be allocated to the welfare budget? In New York City alone there are 32,000 of these pigsties.

Where there's a will there's a way. The eighteenth amendment will not be repealed, but that should not mean that we must remain completely foolish.

Hospital funds are needed imperatively and justly. Why should not that fact settle all sophistries and inhibitions?

#### Physiologic Sterility and Prevention of Conception

H. Knaus (*Zentralblatt für Gynäkologie*, September 26, 1931) maintains that fertilization in women coincides in time, as in most mammals, with the termination of the ovulation process. Therefore in a sexual cycle covering several weeks there is a comparatively long period of physiologic sterility. In what we rate as normal circumstances ovulation occurs between the fourteenth and sixteenth days of the menstrual cycle, with capacity for conception limited to the time between the eleventh and the seventeenth day. Physiologic sterility prevails during the first ten days and from the eighteenth day of the menstrual cycle. Knaus holds that abstinence during the period of conception capacity is the only natural, hygienic, ethical and esthetic method for the prevention of conception. Allowances must be made for variations in the length of menstrual cycles, since the periods of conception capacity and of physiologic sterility vary accordingly.

#### The Cost of Medical Care

76,000,000 of our people (65 per cent of the total) receive an annual income of \$460 per person, while 80 per cent receive an income less than \$510 per capita.

What a coldblooded, uncultured, unethical civilization it must be that sponsors such an economic system!

With less than a living wage and drudging so continuously when employed as to be unable to make easy contact, when ill, with the private practitioner, vast numbers of our people are failing to receive proper medical or preclinical attention, and numerous public nuisances, not devoid of humor of a sardonic sort, wish to see the medical profession held responsible as quasi-criminals for this state of affairs.

The motives actuating these public nuisances are paternalistic, narrowly economic, and in the sole interest of a class. They would thereby make still more certain the continued withholding of a fair share of the profits of industry from the victims of the wage system. Socialization of the medical profession and a "solution" of the vexed problem of the medical expense involved in good private care, with labor again a wretched commodity instead of a living force, are the keys to this objective.

The task of our strategists and tacticians is to confound this racket.

The elements of the situation are simple enough and we must show our understanding of them and go to the mat in forthright fashion.

#### Miscegenation in New York State

J. V. DePorte, Ph. D., Director of the Division of Vital Statistics of the New York State Department of Health (*Human Biology*, Vol. 3, No. 3, September, 1931), presents the following findings with regard to the marriages of colored persons in the State of New York:

In 1919-1929, the longest period for which the information

is available, there were recorded in the State of New York, exclusive of New York City, the marriages of 17,781 Negroes and 650 "other colored" persons—Chinese, Japanese, Indians, etc. Negro brides numbered 8,800. Of their grooms, 8,706 were Negroes, 9 "other colored," and 85 white—of the latter, 57 were native-born and 28 foreign-born. Thus, in about one per cent of the marriages Negro women married white men.

Negro grooms numbered 8,981. Of their brides, 8,706 were Negroes, 13 "other colored," and 262 white—of whom 237 were native born and 25 foreign-born. In 2.92 per cent of these marriages, Negro men married white women.

In the group of "other colored," we find 318 brides. Of their grooms, 250 belonged to the same group of "other colored," 13 were Negroes, and 55 white—41 native-born and 14 foreign-born. Marriages with whites, therefore, represented 17.29 per cent of the marriages in this group. The grooms numbered 332; of their brides, 250 were "other colored," 9 Negroes, and 73 white—58 native-born and 15 foreign-born. Marriages with whites represented 21.99 per cent of all the marriages in this group.

Marriages of Negro women with white men were slightly more numerous in the rural part of the State, while marriages of Negro men with white women were more common in the urban territory. In the urban area 0.95 per cent of the marriages of Negro women and 3.36 per cent of the marriages of Negro men were to white persons, while in the rural part of the State the corresponding proportions were 0.99 and 2.00 per cent respectively.

Marriages of "other colored" persons with whites were relatively more numerous in the urban than in the rural area. In the former, 22.36 per cent of the brides and 37.62 per cent of the grooms married white persons, while in the rural part of the State the corresponding proportions were 15.86 and 10.80.

Assuming that such marriages are determined chiefly by economic considerations, it is to be expected that the near future will show a marked increase in them, because of the increasing economic strain upon the masses. Negro women will marry increasingly economically handicapped white men, and Negro men will marry increasingly economically handicapped white women. The same thing will be true of the "other colored" in relation to whites. Extramarital relations between these various groups will also be determined upon much the same economic basis.

It would seem to be in order to suggest as the underlying law: the rate of miscegenation proceeds according to the degree of economic strain upon the masses.

## Miscellany

### Hardy Pill Takers of England

That he has taken 23,000 medicinal tablets in the last seven years, nearly ten a day, was revealed by Dr. A. Hawkyard, the Lord Mayor of Leeds, England, recently. Dr. Hawkyard made this statement when opening a chemists' exhibition at the Leeds Town Hall. The 23,000 tablets contained, he said, half a hundredweight of hydrochloric acid and milk and four-fifths of a hundredweight of liver extract. He felt, he added, that his persistence in taking the tablets had resulted in his being as physically fit as he is.

Dr. Hawkyard did not claim that there was anything particularly startling about his performance, which, as a matter of fact, pales into insignificance beside that of England's greatest known taker of "physic."

This was one Samuel Jessup, a rich and eccentric bachelor grazier, of Heckington, in Lincolnshire. Jessup, who died on May 17, 1817, had an inordinate craving for medicine. Between 1791 and 1816 he took

226,934 pills at the rate of 10,806 a year.

At the beginning his consumption was moderate, but during the last five years he took about 450 pills a week, touching his zenith in 1814 with an aggregate of 51,190.

He also drank 40,000 bottles of medicine and immense quantities of jalep and ate powders mixed with honey. When his apothecary, unable to obtain payment for part of this "shipping order" of medications, took him to court, the bill ran to fifty-five closely written columns.

—*New York Times.*

### Slips That Pass in the Night

**Spread of Birth Control.**—The following week 121 families numbering fifty-seven persons were given aid.—Raymond (Wash.) paper.

### The Great Rum Myth

Now when it is proposed that we brew beer and manufacture whisky again in order to lessen unemployment, increase revenues and hearten the people psychologically, statistics are quoted to show that these industries never employed many workers, did not turn out vast quantities of beverages, and were an inconsequential source of revenue. The statistics seem to be based on authentic records and are convincing enough.

Why, then, was a prohibitory law such a burning necessity, and why do we need it now?

### Mind-Consciousness

The National Committee for Mental Hygiene, in its announcement of a new division to promote psychiatric education throughout the country and to develop trained personnel, says:

"The dearth of competent psychiatrists is becoming a major issue in human welfare. . . ."

The committee deplores that among 160,000 physicians in the country, but one in 100 is a psychiatrist, a percentage "out of all proportion to the magnitude of the problem of mental and nervous disease."

There is undoubtedly need for an increased number of competent psychiatrists, especially in institutions for the insane, where the number of patients has so rapidly increased. There is need for competent psychiatric observation and study of delinquents and criminals.

But apart from these and other specialized fields, the need is not for specialists but for an appreciation on the part of the country's 160,000 doctors generally of the mental problem so often lying behind or arising out of the physical troubles they treat. The desire to bring psychiatric knowledge to these is the most laudable part of the committee's program.

Specialization in medicine proper has already gone to extremes—one in every four doctors is a specialist, or claims to be. The need is for a reversal of the specialization tendency back toward the family doctor who can doctor the whole body and who will have added modern knowledge of the power of the mind to produce bodily disease, and of bodily disease to produce mental trouble.

And while generally encouraging the intentions of the committee, it is impossible not to wonder with great misgivings where the growing mind-consciousness and the increasing tendency to probe into minds is leading. Humankind long since has become body-conscious. This has had excellent results in the way of disease prevention, but it has led to abuses and to

a good deal of the very mental trouble which the committee thinks requires so large an increase in the number of psychiatric specialists.

It cannot be too strongly pointed out as a safeguard that if "the dearth of competent psychiatrists is becoming a major issue in human welfare," the growing tendency to make a body-conscious generation also mind-conscious can also become a grave issue in human welfare.

—*New York World-Telegram.*

#### And This is 1932

Helen Hanna is the 15-year-old daughter of poor, Syrian-born parents out in Portland, Ore. Helen's little sister stole something and Helen was accused of inciting her to do it.

Out there the courts have psychiatrists. A psychiatrist is a person who is supposed to be an expert on the mind. Handled honorably, by intelligent persons, psychiatry has its uses but, unfortunately, the profession has its drawbacks.

The court psychiatrist gave Helen an "intelligence test," and found that she knew the name of the mayor of Portland, the King of England, the President of the United States and his predecessor and that she answered correctly several other questions of general information. But Helen did not know the life span of a horse (neither do we without looking it up), why the heart beats (neither do we), the largest city in the United States (neither do we, although we do know which one has the greatest population).

So the psychiatrist ordered that Helen be operated upon so that there would never be any little Helens.

Her terrified father went to a newspaper, the *Portland Oregonian*, which had the order reversed and saved the child. The only thing that could make this story complete would be to have the newspaper conduct a campaign to have the psychiatrist operated upon.

—*Boston Traveler.*

#### Doctor versus Soldier

In Mark Sullivan's third volume of "Our Times," one of the few intelligent histories ever compiled, there is a splendid chapter on Dr. C. W. Stiles and his fight against the hookworm.

If historians gave more glamor to doctors and less to generals, human destinies might be changed. For upon the heads of these men must fall a large share of the responsibility for war. They have ever been proponents of the theory that civilizations are made by warriors and that soldiers are the only defenders of a nation.

\* \* \*

No more erroneous idea was ever kept alive by folk tale or pen. And the annals of no country are complete until its scientists, its physicians, its engineers and its teachers are accorded the same immortality upon their pages as that which now only goes to those who bear arms.

What could be more inspirational to school children than a complete story of man's war against disease? There have been many such thrilling battles. Against the Black Plague, against smallpox, against malaria, against diphtheria, against tuberculosis, against diabetes, against cancer. Are these not the most notable of man's conflicts?

The victories of generals and colonels and sergeants fade beside the glory of the achievements of the doctors of the earth.

Yet history lauds Stonewall Jackson and Marshal Ney, and gives no mention to such men as Harvey, Jenner, Goldberger, Stiles and Lazear. The Peloponnesian War is a reality, but the names of those who conquered pelagra are little known. Kitchener and his deeds are the admiration of youth, while Koch, the discoverer of the tubercle bacillus, is a stranger to most American go-getters.

Every schoolboy remembers Perry and Putnam. Historians have seen to that. But how many do you suppose know anything about those two greater heroes, John Kissinger and John Moran, who gave their lives that their countrymen need never again fear yellow fever? Mankind has not been saved by battle-axe and sword, but by the test tube in the hands of men who are more worthy of gratitude than all the generals of the past.—*New York World-Telegram.*

#### IN MEMORIAM

Walter Aikman Sherwood

December 25, 1875—November 21, 1931

To prepare with deliberate zeal for a life of service bespeaks purpose. To cultivate a career of accomplishment means satisfaction. To increase in excellence in the exercise of an art signifies growth. To be occupied in the masterful practice of that art is the splendid fulfillment of life.

Walter Aikman Sherwood was the living expression of such purpose, growth, satisfaction and fulfillment. He prepared himself with care and moved on always toward perfection.

Born on Christmas Day, in 1875, he carried in his person the illumination which characterizes that season of hope.

He laid the foundation of education in Rutgers College and Columbia University, graduating from the College of Physicians and Surgeons in 1896. He spent a year in post-graduate study, serving as Ambulance Surgeon in Roosevelt Hospital and Bellevue Hospital in New York.

He won first position in the competitive examination for internes on the staff of the Methodist Episcopal Hospital and on the first of July, 1897, he entered upon his duties. Completing his internship at the end of two years, he was appointed Clinical Assistant in Surgery at the same hospital in 1900. Two years later he was appointed Assistant Attending Surgeon in the service of Dr. Lewis Stephen Pilcher. In 1908 he became Attending Surgeon and served until he resigned in 1916.

He was appointed Associate Surgeon to the Brooklyn Hospital in 1914, and Attending Surgeon in 1916. In 1925, he was made Director of Surgery and continued in that office until his death on the 21st day of November, 1931.

His most important contributions to surgery were in connection with the Brooklyn Hospital. As the head of its Department of Surgery, he wielded a large influence in bringing that institution to a position of salient superiority.

The honorary positions and the recognitions which his profession bestowed upon him were many, and rested lightly among his galaxy of accomplishments. He was Consulting Surgeon to the Methodist Episcopal Hospital, to the Eastern Long Island Hospital and to Pratt Institute; member of the Brooklyn Surgical Association, International Surgical Society, and one of the founders and a fellow of the American College of Surgeons. In 1919 Rutgers College gave him the honorary degree of Doctor of Science. His social

proclivities expressed themselves in membership in numerous clubs and fraternities.

He presented many papers before surgical societies, and published surgical monographs on a multitude of subjects. In 1927 he edited the Brooklyn Hospital number of "Surgical Clinics."

All of this work was characterized by its practical quality, clearness, and simplicity.

In 1899, 1901 and 1903 he spent varying periods in the surgical clinics of England, Scotland, France and Germany. He made frequent journeys to foreign lands for study and recreation.

During the late war, Dr. Sherwood was commissioned, in 1918, as Surgeon with the rank of Major. The same year his rank was increased to Lieutenant Colonel, and in 1919 he was retired as Colonel. He served as Chief Surgeon at the U. S. Army General Hospital No. 1 from July 1, 1918 to June, 1919.

His ancestry was Puritan and Pilgrim New England stock. A great-great-grandfather served in the War of the Revolution and uncles fought on both sides in the Civil War.

It has been my fortune to have known Walter Sherwood as colleague and friend since 1897, when as an examiner I first interrogated him on the occasion of his contest for internship at the Methodist Hospital. I recall his wedding at Grace Church, New York, in 1909, which united him with a wife who was always his close companion. Her death, a few months before his own, left him sorely shocked and took away from him a major incentive to life. Their only child, a lovely daughter, now faces the world with precious memories but without the guiding love of mother and father.

And those of us who were his friends are left bereft, to go on with the unending train of duties and disillusionments. Walter Sherwood gave us of his rare companionship, the memory of which we may treasure as a blessed heritage. He was an upstanding man, forthright and dependable, fair in judgment, unpretentious and kindly in ideals. He loved clean mirth and joy that had no sting. His face radiated the spirit of goodwill. He was, in all, a gentle man.

His character was rich in the love of life and its satisfactions. He was an illuminated and illuminating personality. He faced all facts with equanimity and courage, and feared neither life nor death.

He combined the two essential qualities of the surgeon: kindness and skill. But the art which he had mastered for others at last failed him when his own life stood in need.

In the full redolence of service, rich with accomplishment, honored and esteemed, he has been compelled by the inexorable tragedy of life to relinquish the emoluments and rewards and accept the simple gift of peace.

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At the 401st Regular Meeting of the Alumni Association of the Internes of the Methodist Episcopal Hospital of the City of New York, the foregoing tribute to the memory of Walter Aikman Sherwood was presented, accompanied with the following report:—

"In the death of Doctor Walter Aikman Sherwood, the medical profession has lost a surgeon of fine abilities and the world has lost a man of outstanding character. He served faithfully and efficiently in the many positions of responsibility to which he was called. His profession has profited by the services he rendered and by the high standards of conduct he exemplified. So valuable have been his contributions

to medical art and so exemplary his attitude toward his profession that his career stands as an inspiration and his life remains an enduring satisfaction to us who were his colleagues and friends.

JAMES PETER WARBASSE, *Chairman*—  
LEWIS STEPHEN PILCHER, HENRY PELOUZE DE FOREST, ARTHUR HENRY BOGART, THOMAS BRAY SPENCE, OLIVER PAUL HUMPSTONE, *Committee*."

The Report of the Committee was accepted.

The Alumni Association of the Internes of the Methodist Episcopal Hospital, at its Fortieth Annual Meeting on December 19, 1931, unanimously endorses and adopts as a Resolution the foregoing sentiments concerning Doctor Walter Aikman Sherwood, to be entered in the records of the Association, sent to the family of Dr. Sherwood and published to the medical profession; and the Association takes this means to pay homage to a beloved colleague, the memory of whom it desires to preserve. HAROLD K. BELL, *President*; ALEXANDER E. DUNBAR, *Secretary*.

#### Contemporary Progress

(Continued from page 56)

(estrin or thelin), that was found to be potent in animals if given in repeated injections. He has used this preparation given by daily subcutaneous injections in the treatment of amenorrhea, menopause, etc. Of 78 patients with amenorrhea treated, only 62 completed the two months course. Of these 32 were unmarried and 30 married. Menstruation was established in 10 of the 32 unmarried women and 18 of the 30 married women. All these patients showed great improvement in general health, and in a number of cases in which menstruation was not re-established there was also an improvement in general health. Five patients with menopausal symptoms were treated, and all markedly relieved. Four patients who had both ovaries removed were treated. In 2 of these the uterus had not been removed, and menstruation was re-established and continued as long as the extract was given; in the other 2 cases a hysterectomy had been done but the treatment relieved the menopausal symptoms, chiefly vasomotor, from which the patients were suffering.

#### Radiation Treatment of Dysmenorrhea

M. Péres (*Gynécologie*, 30:538, September, 1931) reports the treatment of dysmenorrhea and menstrual irregularities by superficial irradiation of the sympathetic nervous system with x-rays of low milliamperage. The rays are centered over the spinal column from the twelfth dorsal to the second lumbar vertebra; the dosage is 3 to 4 units with aluminum filter. In cases in which localized eczema or circulatory disturbances complicate the menstrual disturbances, other areas in the spine are also treated according to the localization of these symptoms. As a rule a single treatment is sufficient to relieve symptoms. If not, a second treatment may be given the following month. There is usually a temporary exacerbation of symptoms within a few days after the treatment, but this is followed by relief of pain, and by correction of any menstrual irregularities in the succeeding months. The author has used this method with good results for three years; and has also employed it for the relief of menopausal symptoms, especially those of the artificial menopause after surgical removal of the ovaries.

#### Recognition of Uterine Cancer in Its Earlier Stages

F. Emmert (*Journal of the American Medical Association*, 97:1684, Dec. 5, 1931) notes that it is generally  
(Concluded on page 66)

# MEDICAL BOOK NEWS

*Edited by WILLIAM HENRY DONNELLY, M.D.*

*All books for review and communications concerning Book News should be addressed to the Editor of this department at 1313 Bedford Avenue, Brooklyn, New York.*

## FEBRUARY

### REVIEWS

#### Young Doctor Thinks Out Loud

THE YOUNG DOCTOR THINKS OUT LOUD. By Julian P. Price, M.D. New York, D. Appleton and Company, 1931. 187 pages. 12mo Cloth, \$1.50.

Doctor Price should be commended for his sympathetic understanding of the troubles confronting the young practitioner, and for the brotherly advice he has to offer. Many of us who have passed through this early critical stage of medical practice are apt to forget the painful experiences which we have shared. Doctor Price paints a hopeful picture for the younger confrere by telling him that such mental agony is normal.

He tells his reader about some of the shortcomings of our clinic system, and about the cautious steps one must exercise in joining a group clinic. He counsels his friends to be independent rather than assistants to other doctors. He admits that our medical system of today is very imperfect but looks forward to the future hopefully.

He accuses the young doctor of being conceited, and of being critical of the older doctor. If conceit tends to diminish with age and experience is it not an evidence of an inferiority complex? This book should serve as a welcome friend to every doctor starting out in practice.

EMANUEL KRIMSKY.

#### The Practice of Medicine

THE PRACTICE OF MEDICINE. By A. A. Stevens, A.M., M.D. Third edition. Philadelphia and London, W. B. Saunders Company, 1931. 1150 pages, illustrated. 8vo. Cloth, \$8.00.

This new edition of the author's *Practice of Medicine* was demanded because of the excellence of this work and because of the advance in medicine since the earlier edition. In order to include the recent advances in the practice of medicine much of the former editions has been omitted and considerable newer material has been presented. The older sections which have been retained have been re-written and brought to the present ideas of treatment. The contents are all-inclusive of diseased conditions and are presented clearly, logically and accurately. It is impossible to give a detailed review of all the topics in the volume, it is sufficient to say to those who know the earlier editions, that this upholds the reputation of the author; and to those unacquainted with the volume, it will well repay a careful study. For a presentable, readable volume of more than eleven hundred pages, the publishers are to be congratulated.

HENRY M. MOSES.

#### The Care and Feeding of Adults

THE CARE AND FEEDING OF ADULTS WITH DOUBTS ABOUT CHILDREN. By Logan Clendening. New York, Alfred A. Knopf, 1931. 317 pages. 12mo Cloth, \$2.50.

Dr. Clendening has written a most absorbing text on what he calls the "Care and Feeding of Adults"—a not unfamiliar title, except that hitherto it has been applied solely to the infant and child. But unlike books on children, this book by Dr. Clendening has no specific directions for the reader to follow and, besides, there are few topics he discusses. If one does not smoke or drink there is but little left for him to observe, namely, exercise, clothing, sleep, and diet-practises which we have acquired in our earlier years.

For this apparently care-free adult, however, Dr. Clendening has a valuable message. He explains why such organizations as the Life Extension Institute "may result in a great deal of unhappiness, mischief, and harm" without resulting in any appreciable reduction in the mortality rate. The matter of clothing has always been an embarrassing topic for the physician for obvious reasons. While Dr. Clendening does not help the physician or even the layman in this matter, he analyzes such empiricism in an historical light. He states that "when clothes were

voluminous, the doctors said they smothered people. If they were scanty, the doctors said they exposed people".

Whatever Dr. Clendening has to say is said without fear and without exciting fear in his reader—a quality which most books on medicine for the layman sorely lack. He is not dogmatic in any of his assertions, but his opinions reflect a breadth of vision and a philosophic outlook on life.

Dr. Clendening is a constructive iconoclast. He exposes some of the fanciful hypotheses that physicians are apt to propound in a fit of unfounded overenthusiasm. For that reason alone this book should win its appeal to both physician and layman for many a year to come.

EMANUEL KRIMSKY.

#### Health Through Will Power

HEALTH THROUGH WILL POWER. By James J. Walsh, M.D. Second edition. Boston, Stratford Company, [c. 1931]. 288 pages. 12mo Cloth, \$2.00.

Every book must offer something to put it across, so to speak. And if we are to rely on the high pressure opinions of enthusiastic friends we observe for example,—"Read this book . . . and cheat the doctor and undertaker as long as possible".

In spite of such fantastic praises the book is a very readable text, written in a rather friendly vein and will no doubt be well received by Dr. Walsh's followers. The author has founded his book on the premises that the conscious will is all important in obtaining and in maintaining health. As such it is a revival of Cœusism, but without any of its sensationalism.

Let it be granted that the will is an important tool in the preservation of good habits and health. But can the individual energize sufficient will power in such toxic disorders as pneumonia or even tuberculosis to aid in his recovery—where, in fact, the will power may work contrary to one's intentions. If the author holds suggestions to the subconscious element or what we civilized folks call faith to be synonymous with the conscious will then the reviewer can see a plausible basis for stimulating "the will".

Dr. Walsh has a gift of story-telling worthy of commendation, and even though this book will not succeed in cheating the doctor of his mighty income it will serve to engender hope in his layman reader.

EMANUEL KRIMSKY.

#### Les Asphyxies Accidentelles

LES ASPHYXIES ACCIDENTELLES (Submersion—Electrocution, Intoxication oxycarbonique): Étude Clinique, Thérapeutique et Préventive. By C. Cot, Paris, N. Maloine, 1931. 414 pages, illustrated. 8vo. Paper, 50 frs.

This volume contains a complete and fundamental study of the problems of asphyxia due to drowning, electrocution and carbon-monoxide poisoning. The author speaks with authority because three years ago he established in Paris the first Mobile Rescue Squad for the asphyxiated and has been able to collect observations upon one hundred and sixty individuals who have been rescued.

Of especial interest is the discussion of the fundamental mechanism of death in asphyxia. The author refers to French, German, Italian and American authorities freely, quotes his own experimental work and then presents his own views. In submergence he shows that edema of the lungs is the prominent finding at postmortem along with a dilatation of the right auricle, right ventricle and pulmonary artery. The left auricle and ventricle are usually empty. The mechanism of death is as follows, anoxemia and variation in the CO<sub>2</sub> content come about by failure of the "peripheral heart" or as we call it the general blood bed with accumulations of the mass of blood in the capillary and venous systems. This results in congestion in the cerebral and pulmonary circulation with oedema of the lungs. Closure of the

glottis with violent respiratory efforts probably bring about the pulmonary oedema.

Under therapy Dr. Cot discusses the methods of artificial respiration and favors that of Schaefer. Then he describes various mechanical devices and methods of administration of oxygen and concludes that the method of Yandell-Henderson using oxygen with 5 per cent CO<sub>2</sub> in some sort of a mask is the most efficacious. At the same time he recommends the injection of oxygen subcutaneously or intravenously while the other treatments are in progress. He also strongly advocates phlebotomy for the relief of the pulmonary edema in drowning, in carbon monoxide poisoning and electrocution except in the so called "white type" in the last two conditions. Here phlebotomy is contraindicated.

Dr. Cot's volume is fascinating and should be of special interest to those responsible for rescue work in our public service corporations and City Police and Fire Departments.

E. P. MAYNARD, JR.

#### Reclaiming the Drinker

**RECLAIMING THE DRINKER.** By Charles B. Towns. New York, Barnes & Company, [c. 1931]. 77 pages. 12mo Cloth, \$1.00.

Those of us who may doubt that a drinker may be reclaimed or that a layman can accomplish things with the drunkard which the physician cannot, may find solace in a complimentary preface to this book by none other than Dr. Richard C. Cabot, proclaiming his great confidence in the methods and accomplishments of Mr. Charles B. Towns.

Only about ten pages of this little handbook, however, are devoted to the real mission of "medically unpoisoning" the alcoholic; the remainder discusses some of the mooted questions concerning alcohol about which there has never been harmony of opinion. His treatment is simple and consists of immediately and completely weaning the drunkard in an institution such as his for a period of at most two or three weeks. He feels that all forms of mental suggestion are without success.

Apparently, Mr. Towns is a confirmed advocate of enforced prohibition. His unique experience entitles him to this. Even beer he places in the category of dangerous beverages. Whether this may or may not be true, one cannot find anything harmful in Mr. Towns' conclusion.

EMANUEL KRIMSKY.

#### Oral Diseases

**ORAL DISEASES. A Practical Treatise Offering Diagnostic and Therapeutic Aid to the Practitioner of Medicine and Dentistry.** By James L. Zemsky, D.D.S. Brooklyn, N. Y. Physicians and Surgeons Book Company, 1930. 402 pages, illustrated. 8vo. Cloth, \$8.00.

This book is a very practical review of clinical cases in every branch of oral diseases requiring surgical treatment.

Although not going into details of surgical procedure, it is of great value to every practitioner as a complete review of all phases of the subject, and is well arranged and magnificently illustrated, making it easily readable.

The author exhibits a wealth of knowledge of the subject in presenting his own very interesting practical cases and in the way they were successfully handled.

The chapter on diagnosis with its discussion on swellings is presented admirably well. It places emphasis on the fact that correct diagnosis is essential for success in the treatment of surgical cases.

Especially commendable is his conservative attitude as is clearly shown in the chapters on fractures and cysts.

A book prescribing practical cases in a practical way by a practical man is of great practical value to the profession and is to be highly recommended.

VICTOR STOLL.

#### Child Health and the Community

**CHILD HEALTH AND THE COMMUNITY. An interpretation of co-operative effort in public health.** By Courtenay Dinwiddie. New York, The Commonwealth Fund, 1931. 80 pages, illustrated. 8vo. Cloth, \$1.00.

This is a compend outlining and discussing, more or less briefly, the results of four demonstrations in child health by the Commonwealth Fund. The primary objects were to first show the need of a child health program in every community of the country, thereby gaining firsthand material to interest private citizens, as well as securing appropriations for carrying out a well-balanced program for and by each individual small city and rural community.

The first was started in 1923 in Fargo, North Dakota. The next year three other demonstrations were instituted in Athens, Georgia, Rutherford County, Tennessee, and Marion County, Oregon, respectively.

These were continued until 1928 and far-reaching results were obtained.

To those interested in present public health methods, we would recommend that these demonstrations be studied, whether you agree with the methods used or not. They appear to be commendable.

THERMAN B. GIVAN.

#### Hervorragende Tropenärzte in Wort und Bild

**HERVORRAGENDE TROPENÄRZTE in Wort und Bild.** By Dr. Med. G. Olpp. München Aerzlichen Rundschau Otto Gimelin, 1932. 446 pages, illustrated. 8vo. Paper, Marks 30.

This is a volume of 446 pages, including Index and 71 plates containing 281 portraits of distinguished workers in Tropical Medicine. It is a veritable "Who's Who" in this particular field and gives evidence of an enormous amount of painstaking work, quite characteristic of Teutonic thoroughness. It begins with Agramonte and ends with Hans Ziemann and covers all of the prominent investigators in all countries. It is encyclopedic and adds to biographic description a voluminous literary source. It is an invaluable addition to the history of medicine and a book which should prove unique in its usefulness. For the "Fachmann" its pages read almost like the "Thousand and One Nights"; they are full of romantic interest. For the writer or reader who desires quick and accurate information Prof. Olpp's work is by far the best known to your reviewer. It should find an early translation into English and other culture languages. The Author is to be commended for his zeal and thanked for giving to the world such a gold mine of facts regarding men whose lives have been spent and many of them sacrificed in attempting to raise the standard of human health and happiness.

J. M. VAN COTT.

#### The Nurse's Medical Lexicon

**THE NURSE'S MEDICAL LEXICON. For the Use of Graduate and Student Nurses, of Premedical and Dental Students, and of the General Public.** By Thomas Lathrop Stedman, A.M., M.D. New York, William Wood and Company, 1931. 629 pages. 8vo. Cloth, \$2.00.

In presenting this book to nurses Dr. Stedman hopes to fill a particular need. He has endeavored to include all terms, definitions of which will be needed by them at some time, and to exclude terms which in all probability would not be wanted by them at any time. The Appendix, containing standard weights and measures, comparative temperature scales, and other information on specific subjects, makes the book additionally valuable.

The result of Dr. Stedman's efforts is an authoritative dictionary upon which the student as well as the graduate nurse can depend. It is also worthy of recommendation to dental hygienists, physicians' and dentists' office assistants and Red Cross and Public Health workers.

FREDERIC DAMRAU.

#### Headache

**HEADACHE.** By William H. Robey, M.D. Philadelphia, J. B. Lippincott Company, [c. 1931]. 234 pages. 8vo. Flexible imitation leather, \$5.00. (Everyday Practice Series—edited by Harlow Brooks, M.D.)

This is an admirable review of the difficult subject of headache, bringing together recent investigative work. Although to the patient, headache assumes the disability of a disease, "to the physician it should never be more than a symptom". Having taken a careful history and made a thorough examination, a conclusion is reached by elimination.

A chapter presents an historical review of the mechanism of headache. Circulatory imbalance has long been thought to be present whether due to constriction or dilatation of a blood vessel, to pressure from a tumor, to nerve irritation or to muscle inflammation.

As to the constitutional causes, the author finds that anemia is not an important factor nor is diabetes, while syphilis, nephritis accompanied by hypertension and the acute infectious diseases commonly present the symptom. In the interesting chapter on headache in hypertension the belief is expressed that "stasis within the veins (cerebral) may account for the early morning headache which disappears as soon as the circulation is stimulated and equalized by activity." In congestive heart disease headache occurs when there is venous stasis and it is commonly found in arteriosclerosis.

Migraine is reviewed in its various aspects. The author evidently is not convinced that food allergy is the principal etiological factor. The numerous other causes are discussed by the able author who has presented a very useful volume.

WILLIAM E. MCCOLLOM.

#### Diseases of the Stomach

**DISEASES OF THE STOMACH.** By Hugh Morton, M.D. London, Edward Arnold & Company; New York, Longmans, Green & Company, 1931. 184 pages, illustrated. 8vo. Cloth, \$4.00.

This is a small volume limited to diseases of the stomach in which the author has concisely put together the most recent studies on the various phases of gastric disease.

The material is grouped in an excellent manner and is at times illustrated by the report of an interesting case record.

The dietetic treatment is briefly discussed as is the medicinal treatment.

The last chapter in the book deals with the various tests of gastric function. These tests are described in a concise manner and complete this small interesting book.

IRVING GRAY.

**How's Your Blood Pressure?**

**HOW'S YOUR BLOOD PRESSURE?** By Clarence L. Andrews, M.D. New York, Macmillan Company, 1931. 225 pages. 8vo. Cloth, \$2.50.

It seems to be one of the axioms of medical practice that when many remedies are recommended for any particular ailment none of them is curative. In recent years the layman has been bombarded on all sides with books on cancer, heart disease, kidney trouble, and other degenerative diseases—not to forget the common cold, too—about which nothing specific could be offered but in place of which voluminous apologies have been written. There are no separate books for the layman on, say, diphtheria protection or typhoid immunization or smallpox vaccination. Their results are too well established to warrant discordant opinions.

This latest book on blood-pressure "is dedicated to you (laymen) who are concerned about your blood-pressure". And then we find 225 pages of high pressure facts to swallow—quite a bulk even for the medical man. As to the contents of the book, the physician can well surmise that it includes about everything that we doctors could think about that malady without telling the layman what he can do for himself or what definite good we can do. The reviewer does not take exception to the contents of this book. A competent medical man can well be relied upon to collect and to record the facts about hypertension. It is the method of approach which seems rather stern. Are we to make our lay readers disease-conscious by feeding them with discouraging literature, or to instill in them hope and encouragement by telling them what medicine can really do? **EMANUEL KRIMSKY.**

**Health for Travelers**

**HEALTH FOR TRAVELERS.** Hygiene and Health Preservation in the Tropics, Orient, and Abroad. By the Staff of the Pacific Institute of Tropical Medicine within the George Williams Hooper Foundation for Medical Research of the University of California. Edited by Alfred C. Reed, M.D., San Francisco, J. W. Stacey, Inc., 1931. 230 pages. 12mo Cloth, \$3.00.

The reviewer is impressed with this book.

First: because it is of a size that can be easily put in a coat pocket. Second: it is very interesting reading—the terms used are easily understood by the layman and it has a certain lure to read on. Third: It gives very valuable information for those who are going to change their locations. Fourth: It is worth while reading for those at home—in that it quickly goes over the essential details of maintaining health.

**J. J. WITTMER.**

**Simplified Diabetic Management**

**SIMPLIFIED DIABETIC MANAGEMENT.** By Joseph T. Beardwood, Jr., A.B., M.D. and Herbert T. Kelly, M.D., F.A.C.P. Philadelphia, J. B. Lippincott Company, [c. 1931]. 191 pages, illustrated. 12mo Cloth, \$1.50.

This small book contains considerable information of tremendous value both to patient and physician. It is terse, but happily so, for the patient is given, in brief, a clear conception of what his disease is and what he should know to help control it. Particularly is he informed on how to avoid the dreaded complications of diabetes and what he should do when they occur. The authors have stressed the importance of the care of a diabetic's feet and the reviewer feels that this can not be emphasized too much.

The last chapter contains a most serviceable food value chart in grams, ounces, and household measures which will facilitate the calculation of numerous diets not only for the physician but also for the patient. It is also replete with various diets for diseases complicating diabetes, e.g., cardiac decompensation, nephritis, peptic ulcer, etc.

**G. J. BRANCATO.**

**La Gastrophotographie**

**LA GASTROPHOTOGRAPHIE.** By A. Bécart. Paris, Norbert Maloine, 1931. 106 pages, illustrated. 8vo. Paper, Francs 30.

In this small volume, the author has described in detail the mechanics of the gastro-photor apparatus and its application in the taking of pictures of the gastric mucosa.

There are many interesting photographs shown with a few clinical records to prove the value of intra-gastric photography.

The literature is complete and for one interested in the subject of Gastro-Enterology, this small book is of value.

**IRVING GRAY.**

**Midwifery**

**MIDWIFERY.** By Ten Teachers, under the direction of Comyns Berkeley, M.A., M.D. Edited by Comyns Berkeley, J. S. Fairbairn and Clifford White. Fourth edition. New York, William Wood & Company, 1931. 740 pages, illustrated. 8vo. Cloth, \$7.50.

The fourth edition of an excellent book. It is just what the foreword says, frankly written for students preparing for their final examination. It is very comprehensive, yet not a book for the general practitioner or the specialist. It is curious to note that in England the left lateral position is still used for forceps delivery. The newer methods of infant resuscitation are not mentioned.

**CHARLES A. GORDON.**

**Anja**

**ANJEA: Infanticide, Abortion and Contraception in Savage Society.** By Herbert Aptekar. New York, William Godwin, Inc., 1931. 192 pages. 8vo. Cloth, \$2.50.

This is an able presentation of the subjects treated, from the anthropological viewpoint. Anja, from which the book takes its title, is a monstrous blackfellow who was made by Thunder and who fashions black babies out of swamp mud and puts them at his will into the womb of women, sexual intercourse, in the belief of the Australian native, having nothing to do with the matter. The author's point here is that neither are we aware of what we are doing; we are clumsy, brutal and primitive, and not conscious of the possible effects of the dangerous tools we are using so extensively and irrationally. His main argument may be gathered from the following passage in the book: "Contraception and abortion are tools. Like most tools they are laden with potentialities for both destruction and construction. The axe falls a tree but it also builds a house. Fire may destroy cities but it also cooks food. The axe demands intelligent use; fire demands intelligent use; birth control and abortion demand intelligent use. When we recognize that these usages are tools, and when we are willing to deal with them as such, then, and then only, shall we be able to direct them to our advantage."

In a foreword, Harry Elmer Barnes indicts the medical profession as scandalously archaic and intolerant in its views on abortion. It must set its house in order, he declares, by launching a move for civilized medical ethics in the handling of abortion policy and practice. The implications here are obvious. He concedes that birth control is in itself no universal panacea for all social and economic ills.

Near the end of the book the author remarks that apart from method, further distinctions between birth control and abortion are matters of casuistry. "Manner of procedure is the only real difference between these two usages. Their end results are identical, as are the purposes for which they are employed." He also tells us that "In Russia, where the government has taken a sane attitude toward this practice, and where abortions are performed legally in hospitals especially set aside for this purpose, the number of deaths from this cause is no greater than through child-birth."

Such is the trend of the times. After the battle for contraception is won, the glorious cause of abortion will be pleaded. Perhaps in the meantime a better distribution of wealth will upset the aims of these advocates.

**ARTHUR C. JACOBSON.**

**The Case Against Birth Control**

**THE CASE AGAINST BIRTH CONTROL.** By Edward Roberts Moore, Ph.D. New York, The Century Co., [c. 1931]. 311 pages. 12 mo Cloth, \$2.50.

Dr. Moore speaks for the Catholic Church in his attack on Birth Control. However one may object to his arguments, it must be admitted that he has prepared a splendid brief. The medical phases of Birth Control are small as compared to the vast problems of overpopulation, family happiness, divorce, morality, and economic conditions—all of which influence one's views on that problem.

The reviewer, as a physician, will confine himself to but a small portion of this book which deals with the medical angle of that case. That the Birth Control League is as extreme on the one hand as the Catholic Church is on the other must be admitted. A happy medium should be sought. Dr. Moore tells us that Birth Control is dangerous or improper because:

1. "Sterility . . . is a probable resultant of contraception".
2. "All known methods of contraception are harmful".
3. "Preventive methods breed disgust for the sexual act".
4. He reminds the doctor that "he who brings about an abortion is actually committing murder". No mention is made of ectopic pregnancies or of toxemias of pregnancy. According to him, there is no excuse for a physician exercising his judgment.
5. Sterilization of mental defects or criminals is ungodly because such persons "come back to public care infected with syphilis and gonorrhoea", and, moreover, has "very little effect on the prevention of mental deficiency". Besides, "there is uncertainty about . . . the whole question of inheritance of feeble-mindedness".

It should be quite evident to the physician that such a biased view is incomptabile with medical thoughts and practices.

**EMANUEL KRIMSKY.**

**The Truth About Birth Control**

**THE TRUTH ABOUT BIRTH CONTROL** with a Bibliography of Birth Control Literature. By Norman E. Himes. New York, The John Day Company, [c. 1931]. 28 pages. 12mo Paper 25c. (The John Day Pamphlets No. 4.)

This booklet of 25 pages does not in any way defend the case for Birth Control, but merely serves to show how birth control literature and its devices constantly find their way through the mails or are imported from Europe, contrary to written laws, but without any interferences whatsoever. Even the Library of Congress itself, "possesses, lends, and sends through the mails on

the interlibrary loan service, prohibited literature contrary to law".

## BOOKS RECEIVED

*Books received for review are acknowledged promptly in this column; we assume no other obligation in return for the courtesy of those sending us the same. In most cases, review notes will be promptly published shortly after acknowledgment of receipt has been made in this column.*

LIVING THE LIVER DIET. By Elmer A. Miner, M.D. St. Louis, The C. V. Mosby Company, 1931. 106 pages. 12mo Cloth, \$1.50.

ALLERGY AND APPLIED IMMUNOLOGY. A Handbook for Physician and Patient on Asthma, Hay Fever, Urticaria, Eczema, Migraine and Kindred Manifestations of Allergy. By Warren T. Vaughan, M.D. St. Louis, The C. V. Mosby Company, 1931. 359 pages, illustrated. 8vo. Cloth, \$4.50.

ONE HOUR OF MEDICAL HISTORY. Compiled by Benjamin Spector, M.D. Boston, The Beacon Press, Inc., 1931. 88 pages, illustrated. 12mo Cloth, \$1.00.

CONQUERING ARTHRITIS. By H. M. Margolis, M.D. New York, The Macmillan Company, 1931. 192 pages, illustrated. 8vo. Cloth, \$2.00.

THE HUMAN VOICE, Its Care and Development. By Leon Felderman, M.D. New York, Henry Holt and Company, Inc. 1931. 301 pages, illustrated. 12mo Cloth, \$2.50.

THE SURGICAL CLINICS OF NORTH AMERICA. Volume II, Number 6 (Philadelphia Number) December, 1931. Issued serially, one number every other month by the W. B. Saunders Company, Philadelphia and London. Per Clinic Year (6 mos.) Paper, \$12.00; Cloth, \$16.00.

DIABETES, ITS CONTROL BY THE INDIVIDUAL AND THE STATE. By Elliott P. Joslin, M.D. Cambridge, Harvard University Press, 1931. 70 pages, illustrated. 12mo Cloth, \$1.00. (Harvard Health Talks, 18).

OSLER AND OTHER PAPERS. By William Sydney Thayer, M.D., LL.D. Baltimore, The Johns Hopkins Press, 1931. 386 pages. 8vo. Cloth, \$3.50.

THE PRACTICAL MEDICINE SERIES. Comprising Eight Volumes on the Year's Progress in Medicine and Surgery, Series 1931. General Medicine, Infectious Diseases. By George H. Weaver, M.D. with the collaboration of T. T. Crooks, M.D. Diseases of the Chest (Excepting the Heart). By Lawson Brown, M.D. Diseases of the Blood and Blood Making Organs; Diseases of the Kidney. By George R. Minot, M.D., D.S. and William B. Castle, M.D. Diseases of the Heart and Blood Vessels, by William D. Stroud, M.D. Diseases of the Digestive System and Metabolism. By Ralph C. Brown, M.D. Chicago, The Year-Book Publishers, 1931. 814 pages, illustrated 12mo. Cloth, \$3.00.

A DOCTOR OF THE 1870'S AND 80'S. By William Allen Pusey. Springfield, Charles C. Thomas, 1932. 153 pages, illustrated. 8vo. Cloth, \$3.00.

FUNDAMENTALS OF ORTHOPAEDIC SURGERY IN GENERAL MEDICINE AND SURGERY. By Robert B. Osgood, M.D., F.A.C.S. and Nathaniel Allison, M.D., F.A.C.P. New York, Macmillan Company, 1931. 311 pages. 8vo. Cloth, \$3.00. (Harvey Lectures.)

PHYLAXIS. By the late G. Billard, M.D. Translated by H. Gainsborough, M.D., F.R.C.P. New York, Macmillan Company, 1931. 77 pages. 8vo. Cloth, \$3.00.

THE PRACTICAL MEDICINE SERIES. Comprising Eight Volumes on the Year's Progress in Medicine and Surgery, Series 1931. General Surgery. Edited by Evarts A. Graham, A.B., M.D. Chicago, The Year-Book Publishers, Inc., 1931. 804 pages, illustrated. 12mo Cloth, \$3.00.

FEMALE SEX HORMONOLOGY. A Review. By William P. Graves, A.B., M.D. Philadelphia, W. B. Saunders Company, 1931. 131 pages, illustrated. 8vo. Cloth, \$3.50.

A TEXT-BOOK OF CLINICAL NEUROLOGY. By Israel S. Wechsler, M.D. Second edition. Philadelphia, W. B. Saunders Company, 1931. 759 pages, illustrated. 8vo. Cloth, \$7.00.

MICROBES AND ULTRAMICROBES. An account of bacteria, viruses and the bacteriophage. By A. D. Gardner, M.A., M.D. New York, Lincoln MacVeagh, The Dial Press, 1931. 120 pages, illustrated. 16mo. Cloth, \$1.50. (Dial Press Monographs on Biological Subjects.)

COURTS AND DOCTORS. By Lloyd Paul Stryker. New York, The Macmillan Company, 1932. 236 pages. 12mo Cloth, \$2.00.

THE PRACTICAL MEDICINE SERIES. Comprising Eight Volumes on the Year's Progress in Medicine and Surgery, Series 1931. Eye, Ear, Nose and Throat. The Eye. By E. V. L. Brown, M.D. and Louis Bothman, M.D. The Ear, Nose and Throat. By George E. Shambaugh, M.D. and Elmer W. Hagens, M.D. Chicago, The Year-Book Publishers, Inc., 1931. 629 pages, illustrated. 12mo Cloth, \$2.50.

ELECTROTHERAPY AND THE ELEMENTS OF LIGHT THERAPY. By Richard Kovacs, M.D. Philadelphia, Lea & Febiger, 1932. 328 pages, illustrated. 8vo. Cloth, \$6.50.

ANJEA: INFANTICIDE, ABORTION AND CONTRACEPTION IN SAVAGE SOCIETY. By Herbert Aptekar. New York, William Godwin, Inc., 1931. 192 pages. 8vo. Cloth, \$2.50.

### Parasitic Infestation of Nose

Harold Liggett describes a case of infestation of the nose with larvæ of the black carpet beetle (*Attagenus piceus* Oliv), an insect that infests carpets, mattresses and blankets. These larvæ are exceptional in that they take two years to reach the adult stage. The insects were never seen *in situ* except on first examination by posterior rhinoscopy. But the appearance of larvæ immediately following a sphenoid irrigation places them somewhere in the sphenoid-ethmoidal recess. It is very possible that the larvæ lodged in the sphenoid sinus, especially since only recently closer observation of the first return flow from the right sphenoid sinus revealed a tiny parasite, small enough to have escaped notice originally. The mother beetle must have crawled in and deposited her eggs in a dark and inaccessible location. This could well have been the ethmosphenoid recess. The larvæ after hatching crawled around the nasal cavity and accessory sinuses, spreading the subsequent rhinitis and sinusitis.—*J. Am. M. Ass.*, 1931, 95.

### Contemporary Progress

(Concluded from page 62)

recognized that in most cases cancer of the cervix uteri is diagnosed only when the disease is more or less advanced; even in the so-called early cases the pathological process is "quite well established." For better results in treatment, it is essential to detect cancer at a still earlier stage, and if possible to discover so-called precancerous conditions that may give rise to malignant degeneration. Among these conditions in the cervix uteri, cervical tears, erosions, evasions, and leukoplakia are important. While the relation of leukoplakia to cancer of the cervix has long been recognized, it has been given too little attention probably because it has been difficult to visualize this lesion on the cervix. Hinselmann of Germany has devised an instrument that makes it possible to inspect the cervix more thoroughly and detect slight changes in the mucous membrane; this is called a colposcope and consists of a pair of binoculars equipped with magnifying lenses and a small, but intense, electric light. With this instrument, Hinselmann has found a higher incidence of leukoplakia than has previously been suspected. The author has used the colposcope in a few cases; in one the actual transition of an advanced leukoplakia into a squamous cell carcinoma was observed; the malignant degeneration was in an extremely early stage and would not have been discovered in the ordinary clinical examination. This case has convinced Emmert that the colposcope permits the diagnosis of cancer of the cervix at the earliest stage when theoretically it is easily and permanently curable.

### Radium and Surgery in Carcinoma of the Fundus of the Uterus

H. H. Bowing and Robert E. Fricke (*American Journal of Radiology*, 26:738, November, 1931) report 189 cases of carcinoma of the fundus of the uterus treated at the Mayo Clinic in 1916 to 1929. Of these 189 patients, 87 were operable and were treated by operation and radium; 102 were treated by radium alone. In the operable group, 31.16 per cent. survived for five years and 46.75 per cent. for three years. In the non-operative group treated by radium alone, 12.63 per cent. lived for five years, and 26.31 per cent. for three years. Computing the three-year results up to 1929, and the five-year results up to 1927, gives more favorable results, with 72.22 per cent. five-year cures in the group treated by operation and radiation in the first and second stages, and 37.03 per cent. in the third and fourth stages. With the non-operative group, radium alone gave 50 per cent. cures in the first and second stages and 8.33 per cent. in the third and fourth stages. Most of the cases treated by radium alone were widespread lesions absolutely inoperable; there were a few cases with smaller lesions where some factor in the patient's general condition contra-indicated operation. In inoperable cases irradiation alone "yields high returns in palliation," though relatively few five-year cures. In operable cases it is a valuable adjunct to surgery, making less radical operations possible.

### Nervousness in School Children

The relation between nervousness in elementary school children and hunger is pointed out by Laird, et al. *Med. Jour. and Rec.*, Nov. 18, 1931. Special feedings of milk between the first two meals of the day to offset hunger pangs may bring an improvement in the nervous condition.

### Tuberculosis

Because of the depression many families cannot obtain sufficient food. As a result there will probably be an increase in tuberculosis, especially in children.

